**FIG. 1**

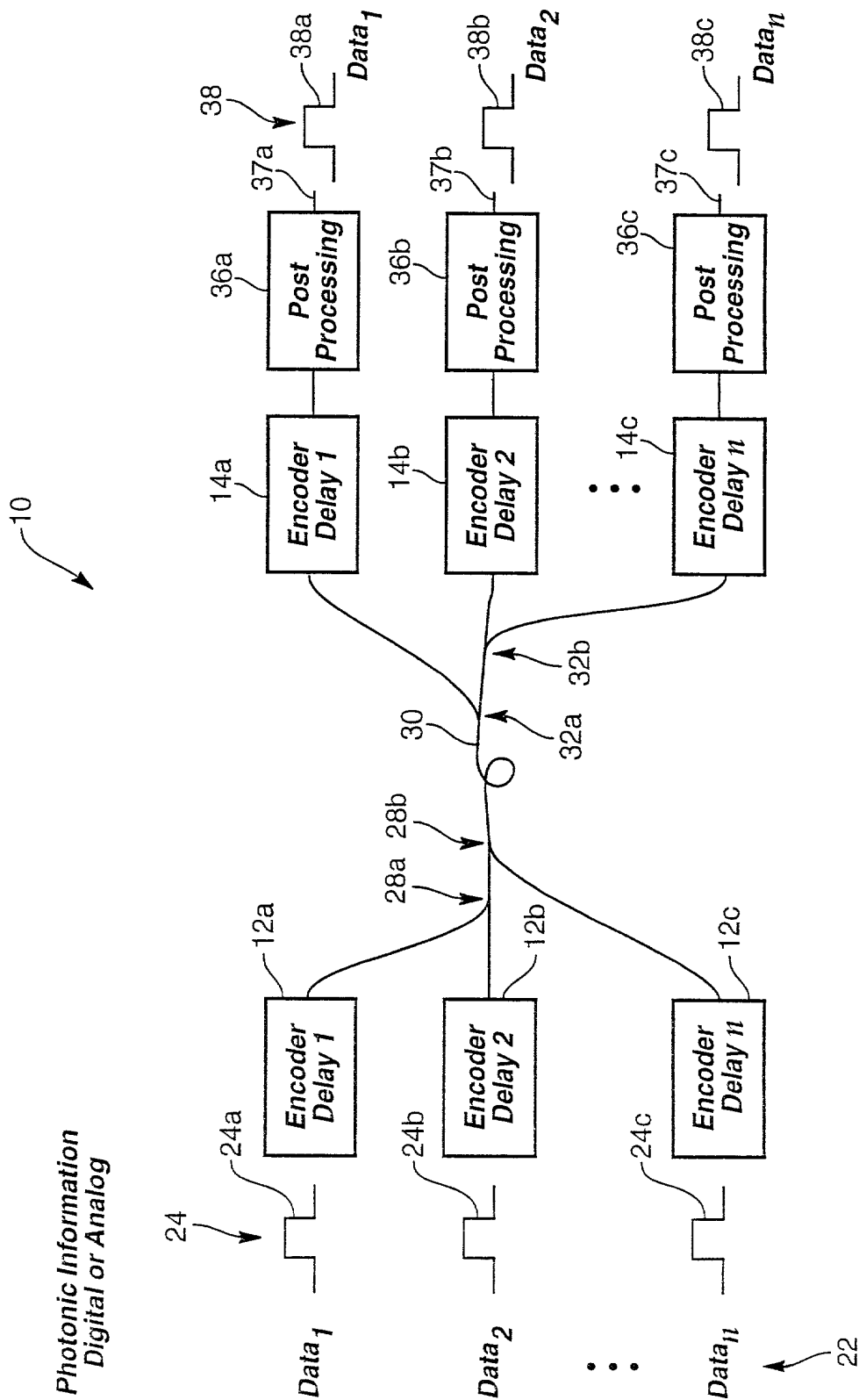
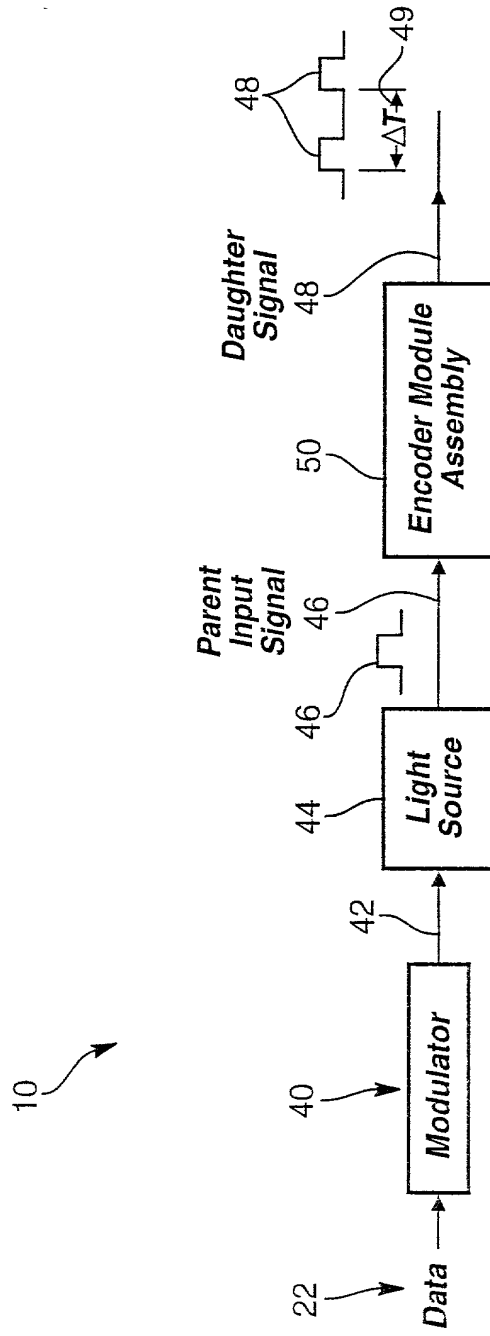


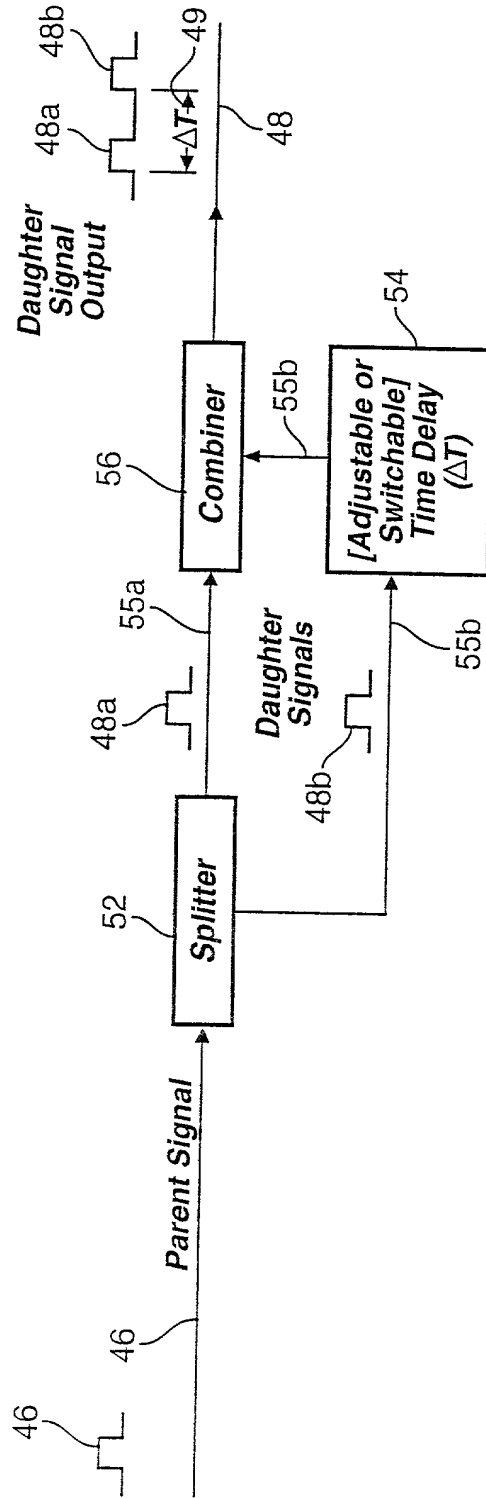
Fig. 2



Differential Delay Multiplexer Sender/Encoder

Fig. 3

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Differential Delay Multiplexer (DDM) Sender/Encoder

Fig. 4

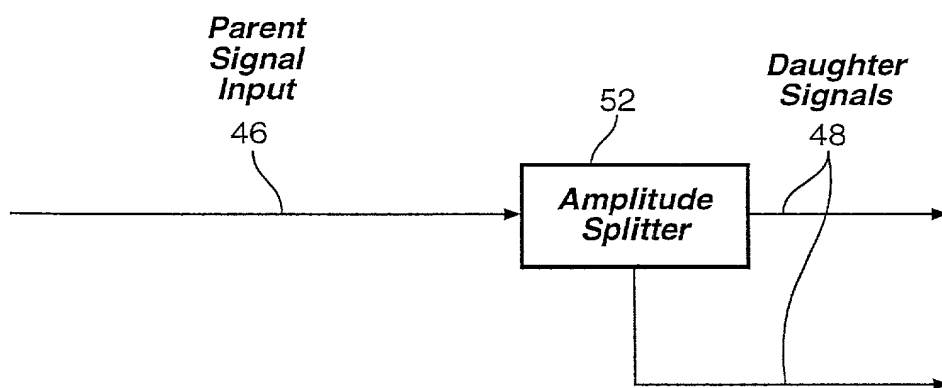
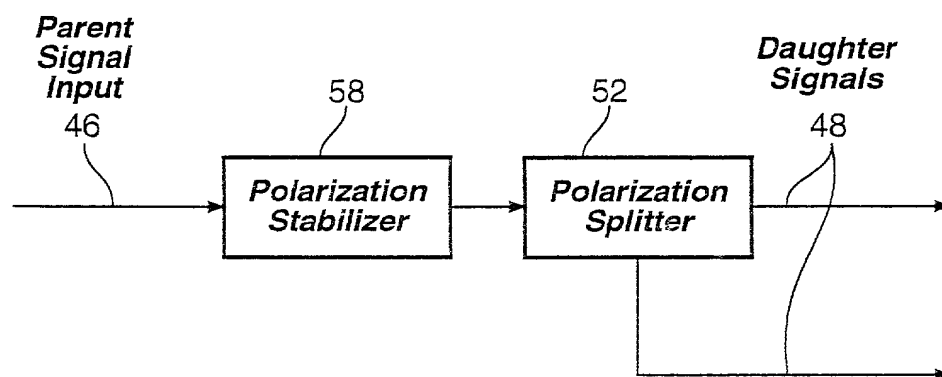
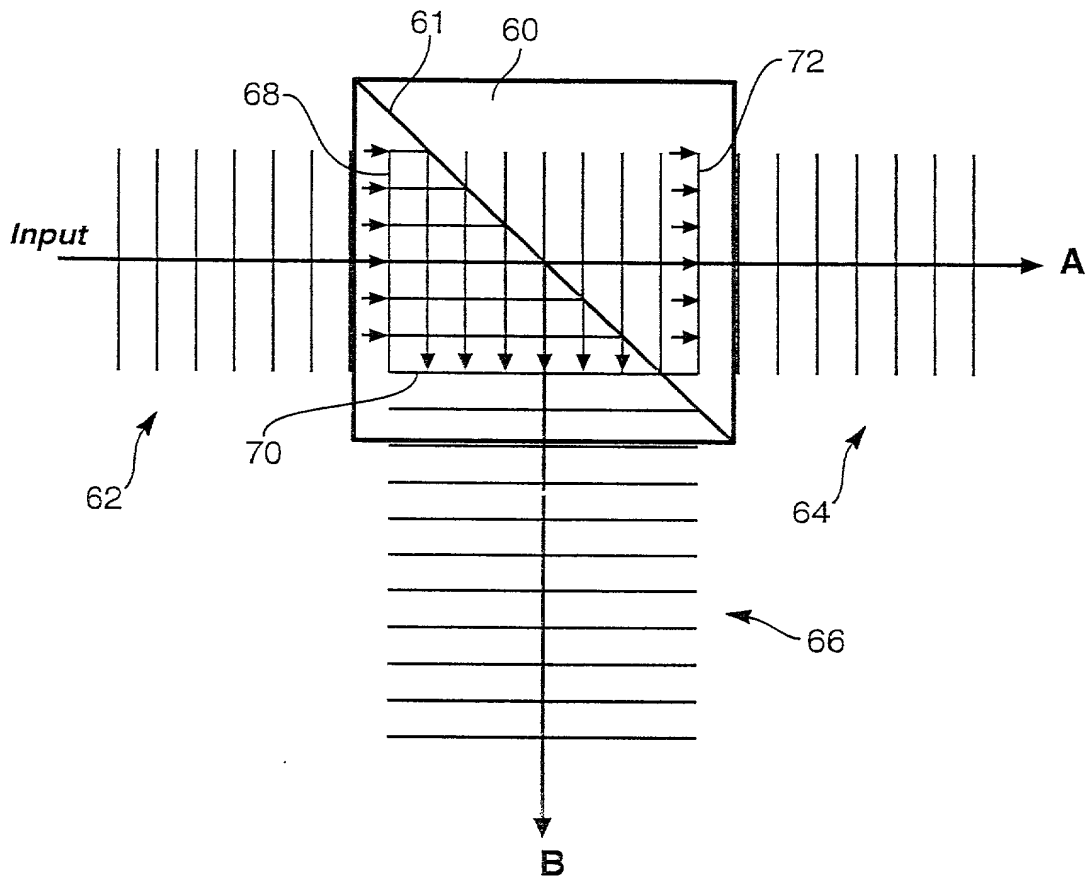


FIG. 5



Splitting Criteria

FIG. 6



Amplitude or Polarization Splitter

FIG. 7

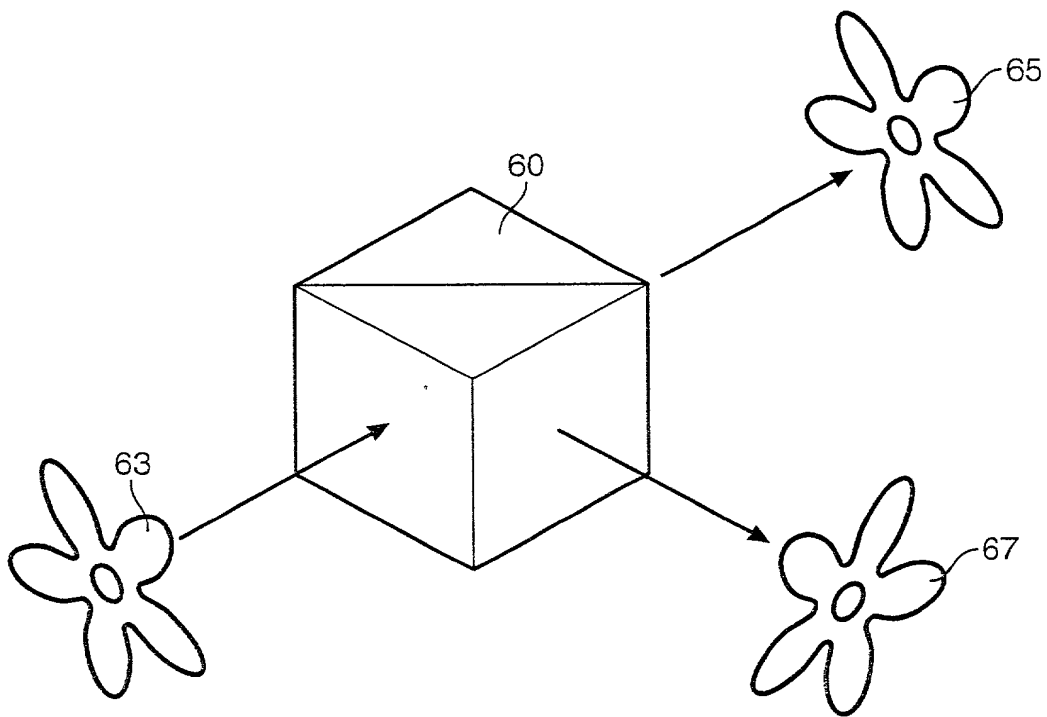
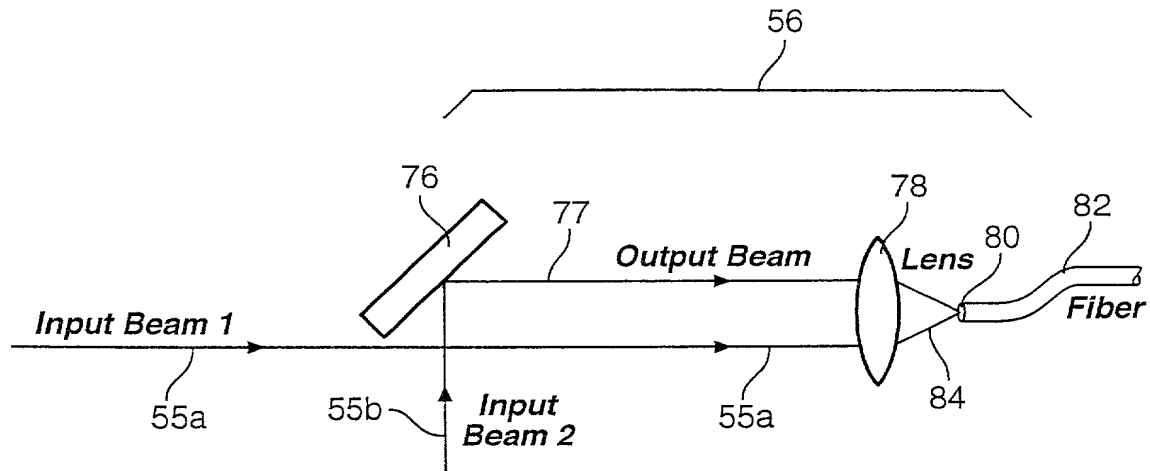


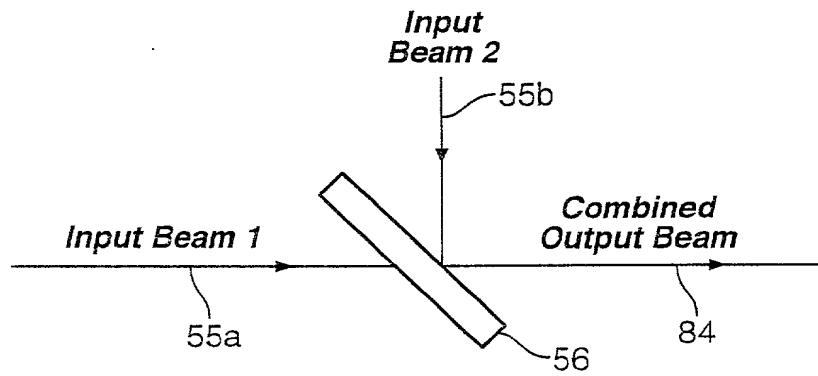
Image Signals Which
Maintain Spatial Information

FIG. 7A

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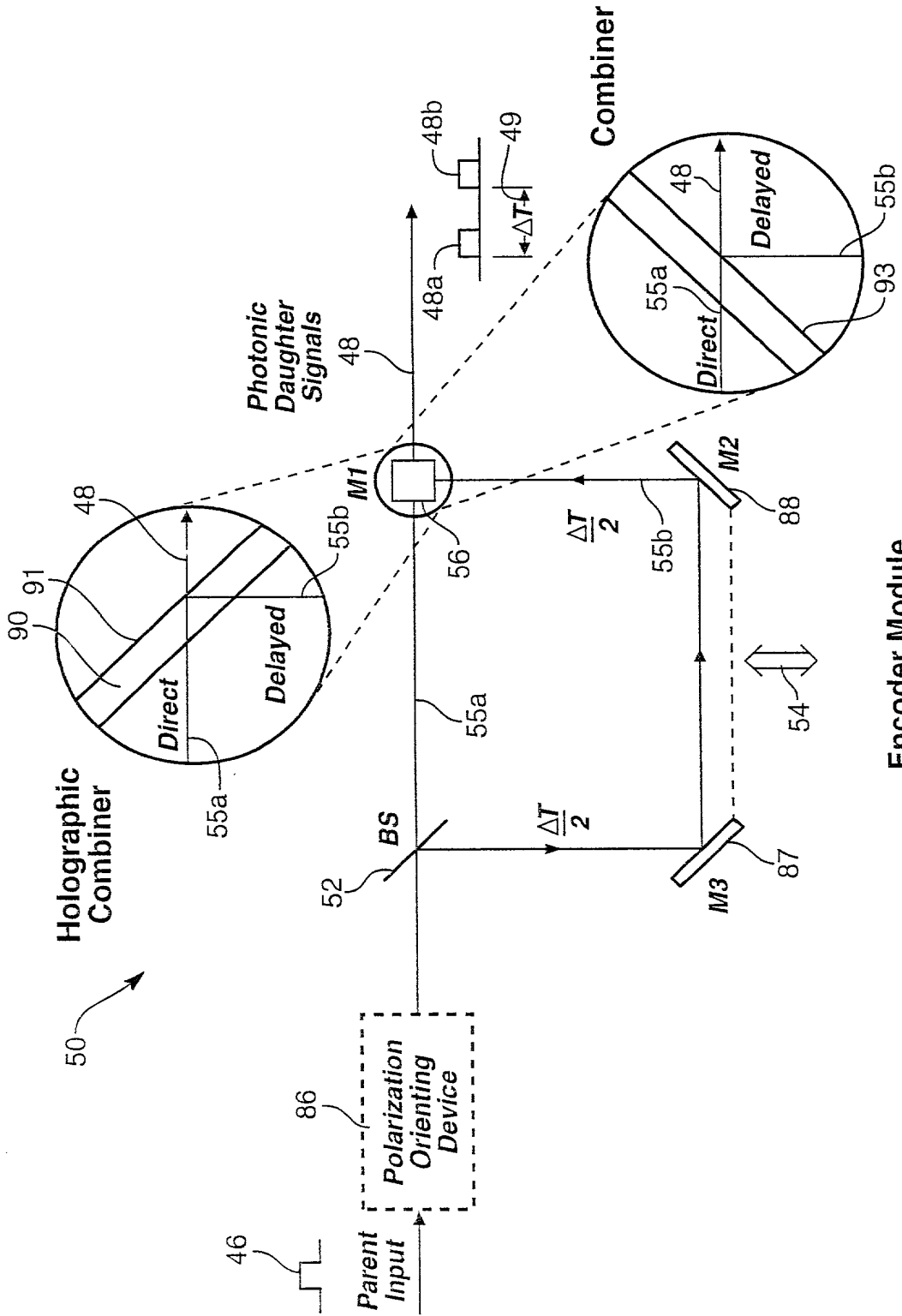


Beam Combiner
FIG. 8



Amplitude or Polarization Combiner

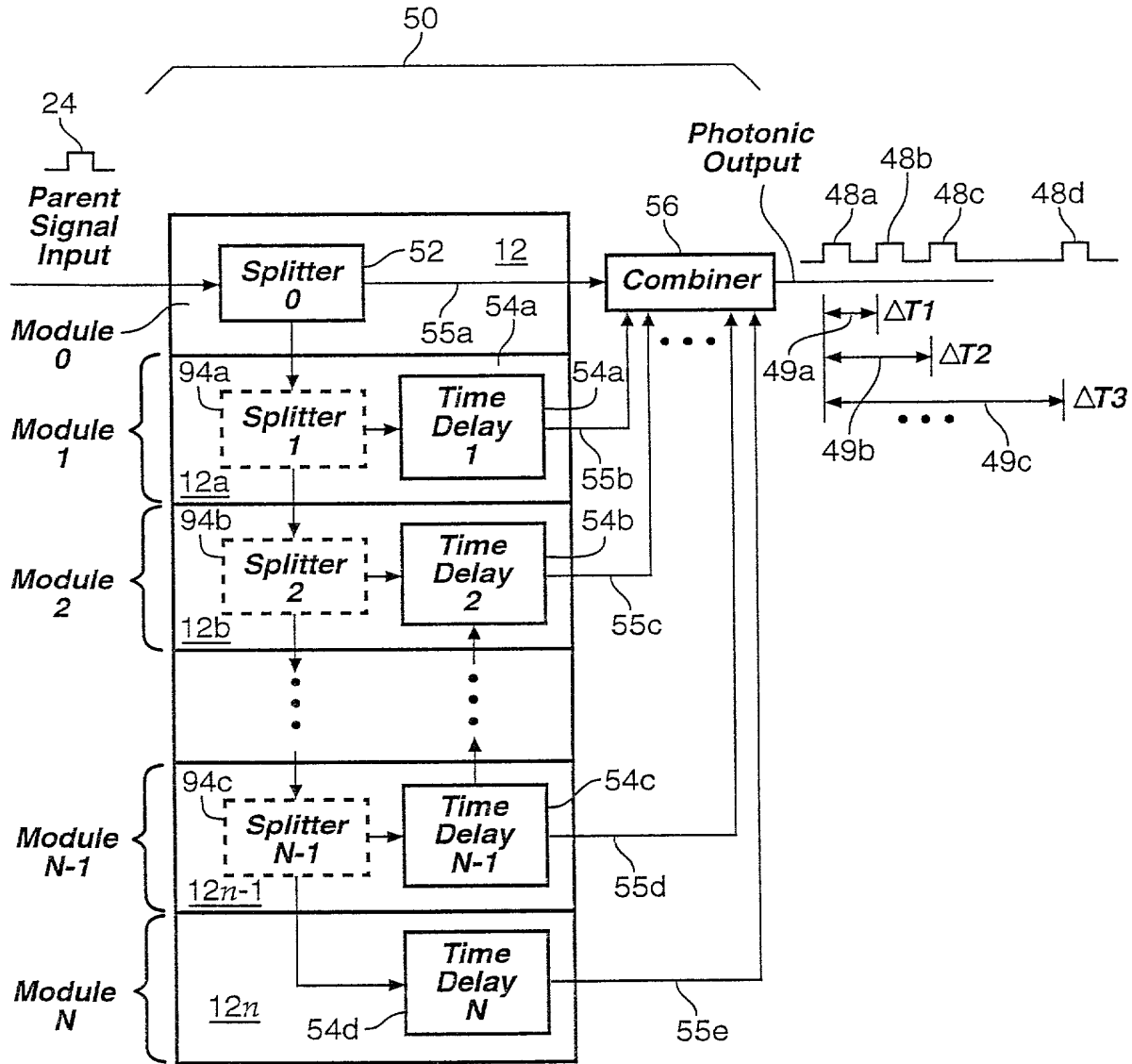
FIG. 9



Encoder Module

Fig. 10

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Composite Encoder
Module Assembly

FIG. 11

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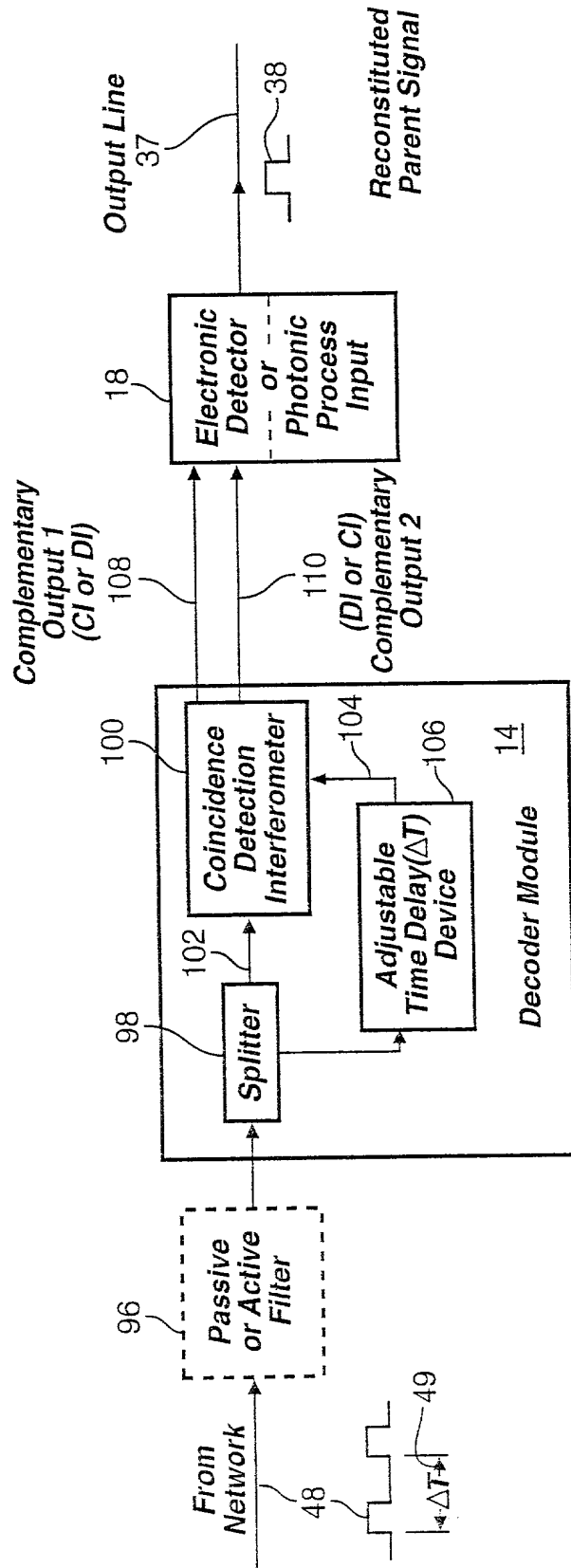


Fig. 12

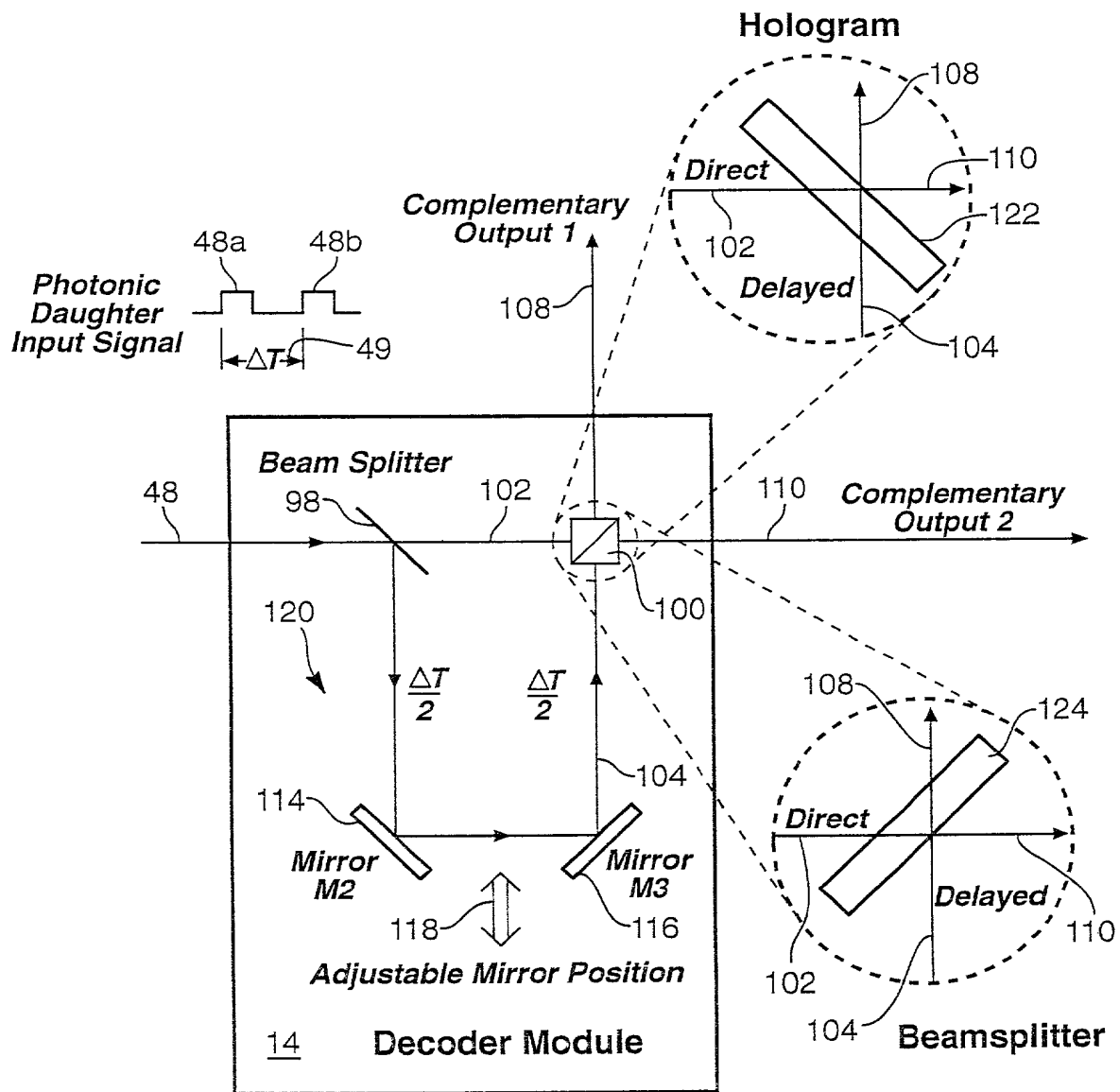


FIG. 13

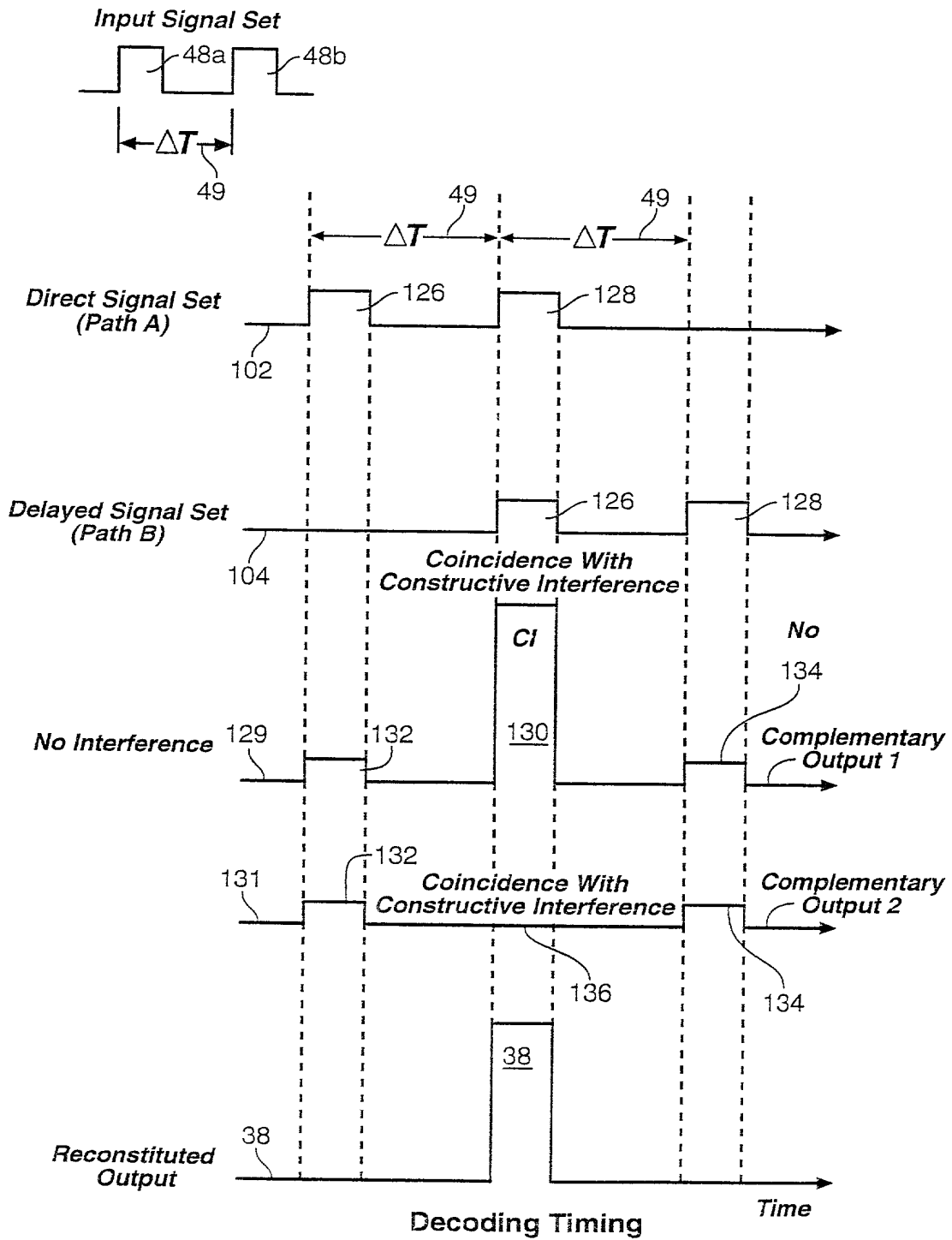


FIG. 14

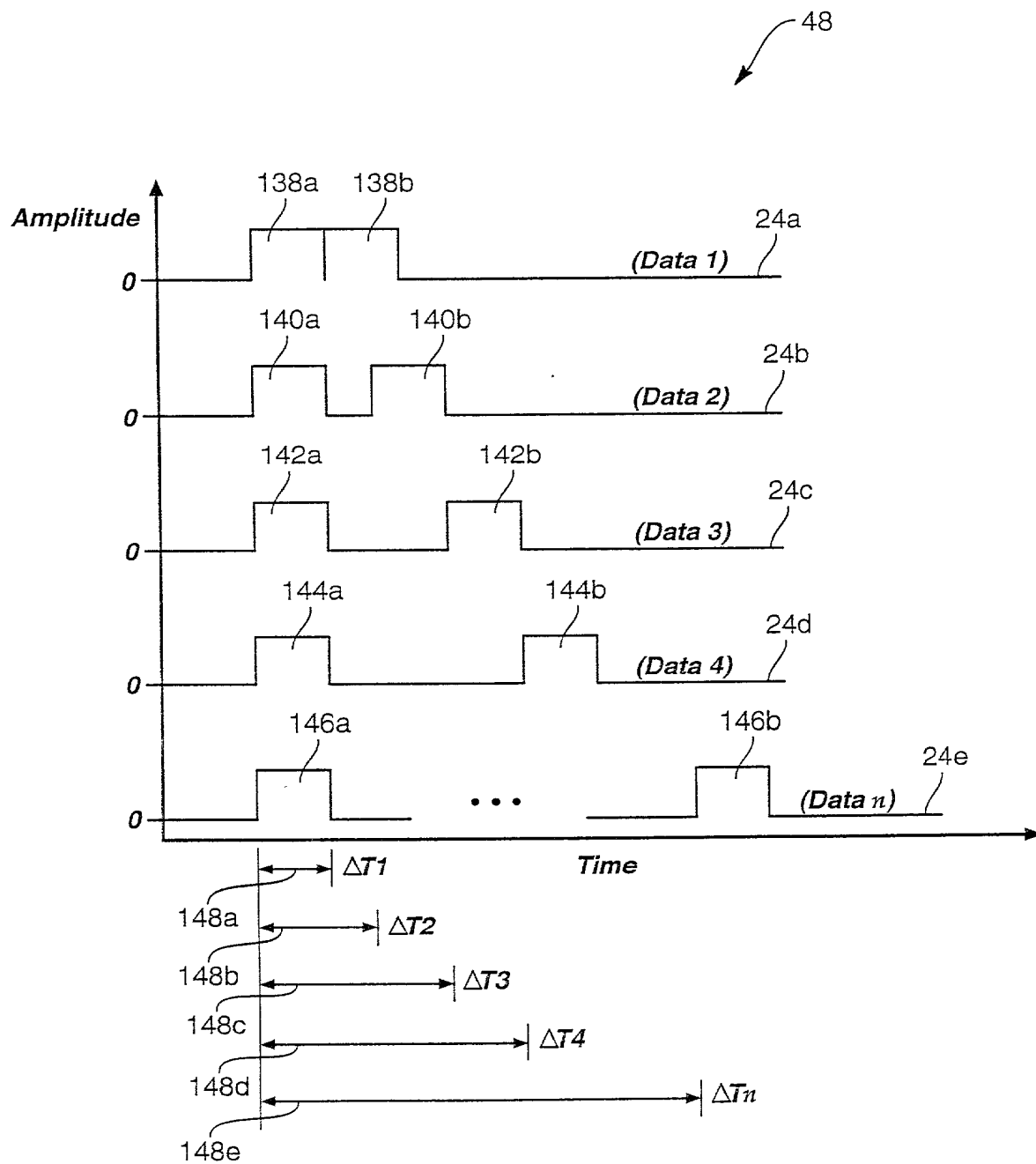


Fig. 15

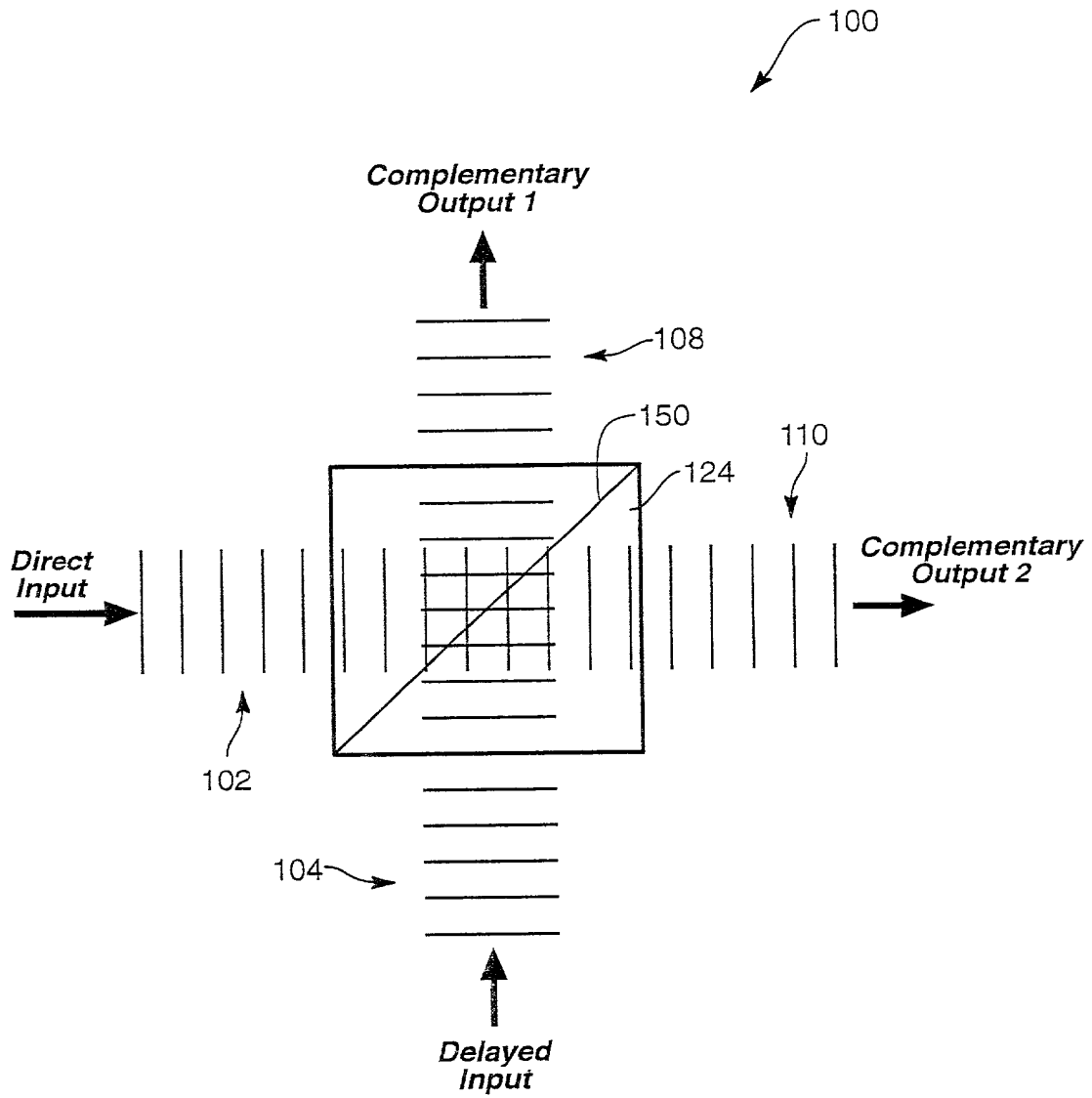


Fig. 16

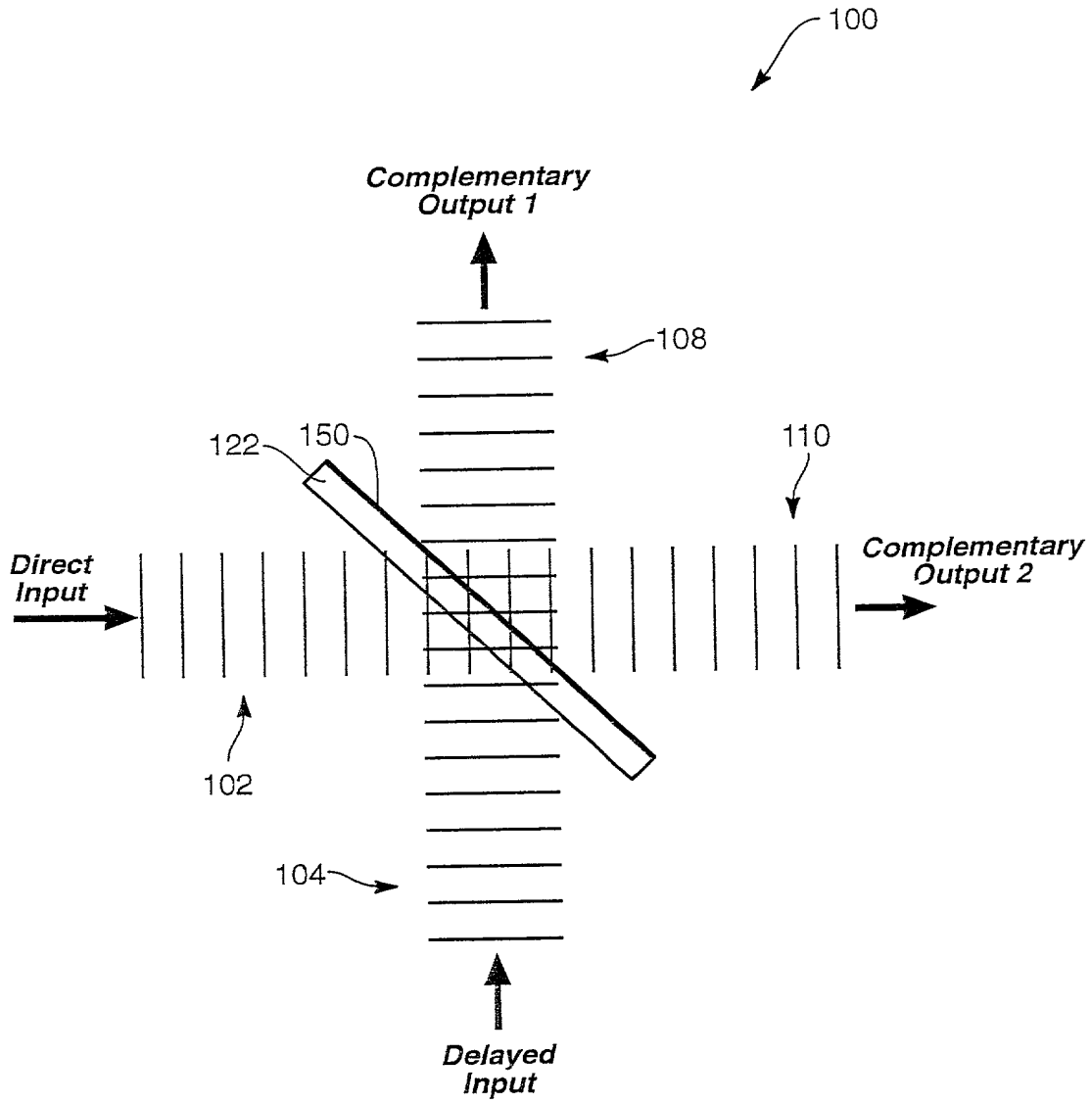


Fig. 17

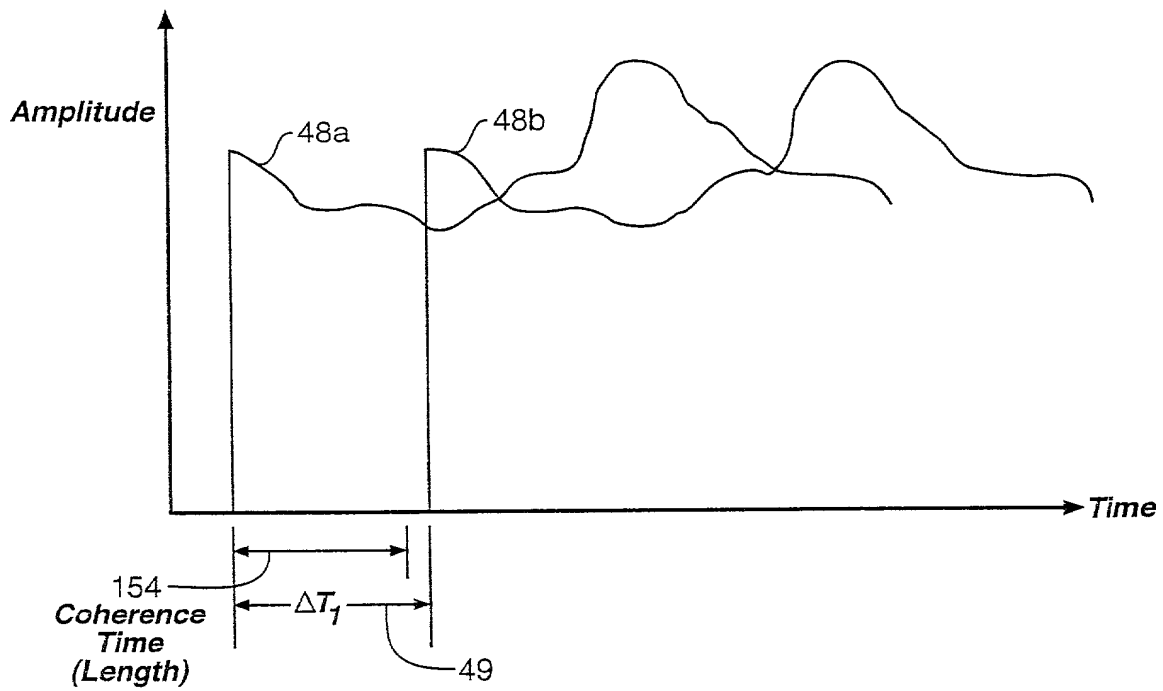


Fig. 18

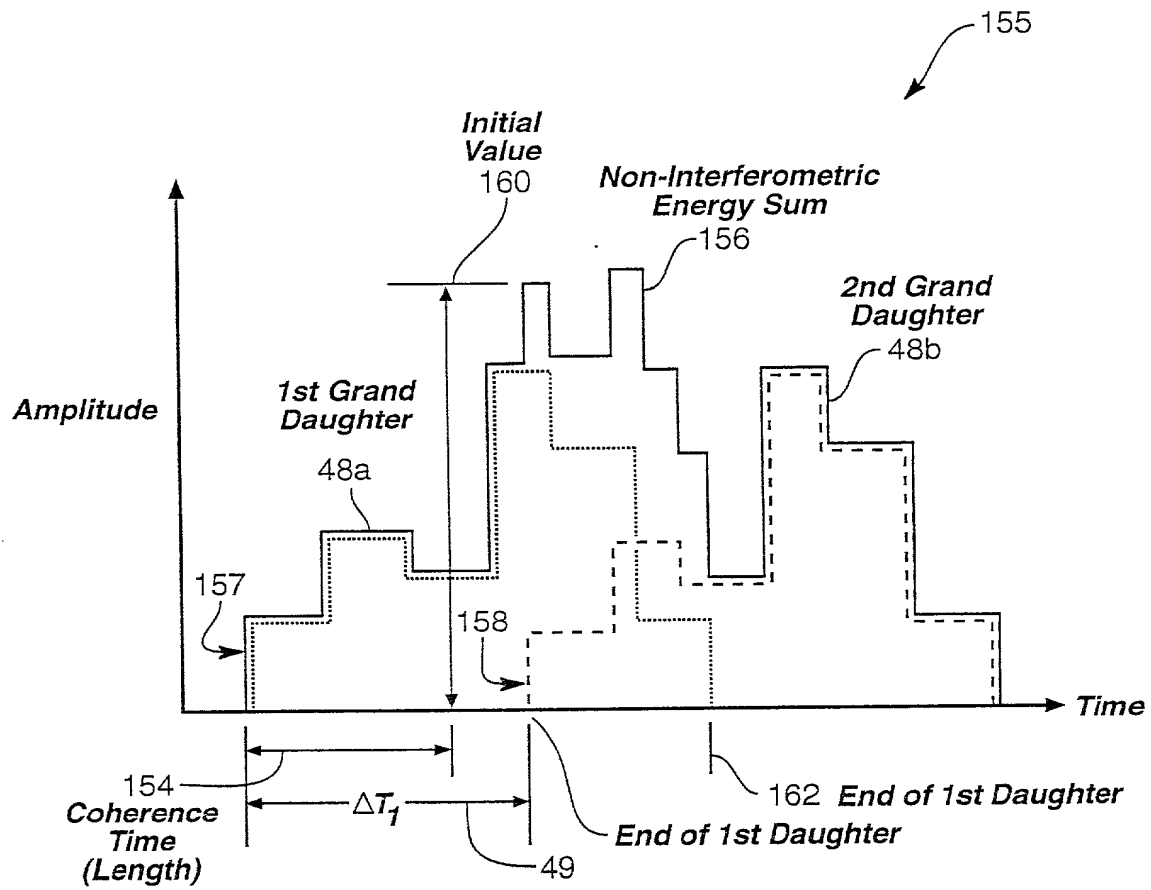


Fig. 19

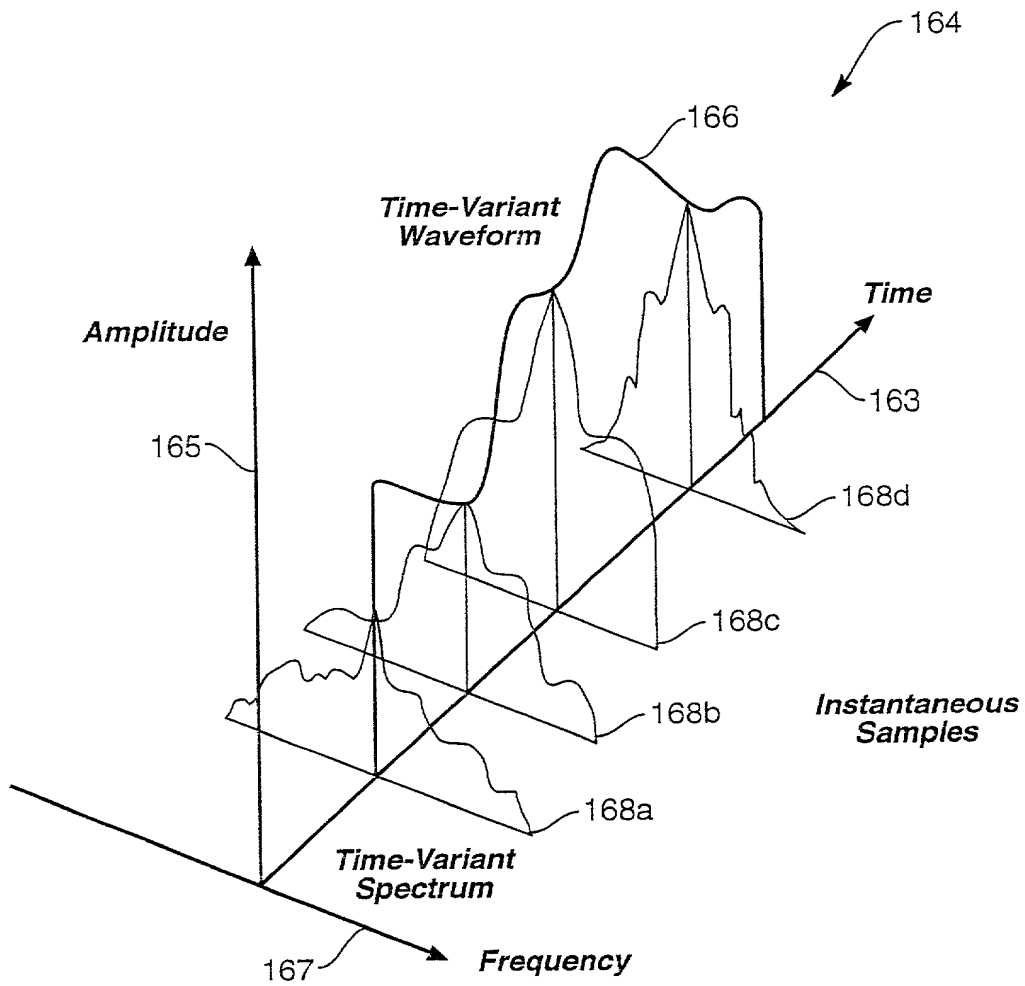


Fig. 20

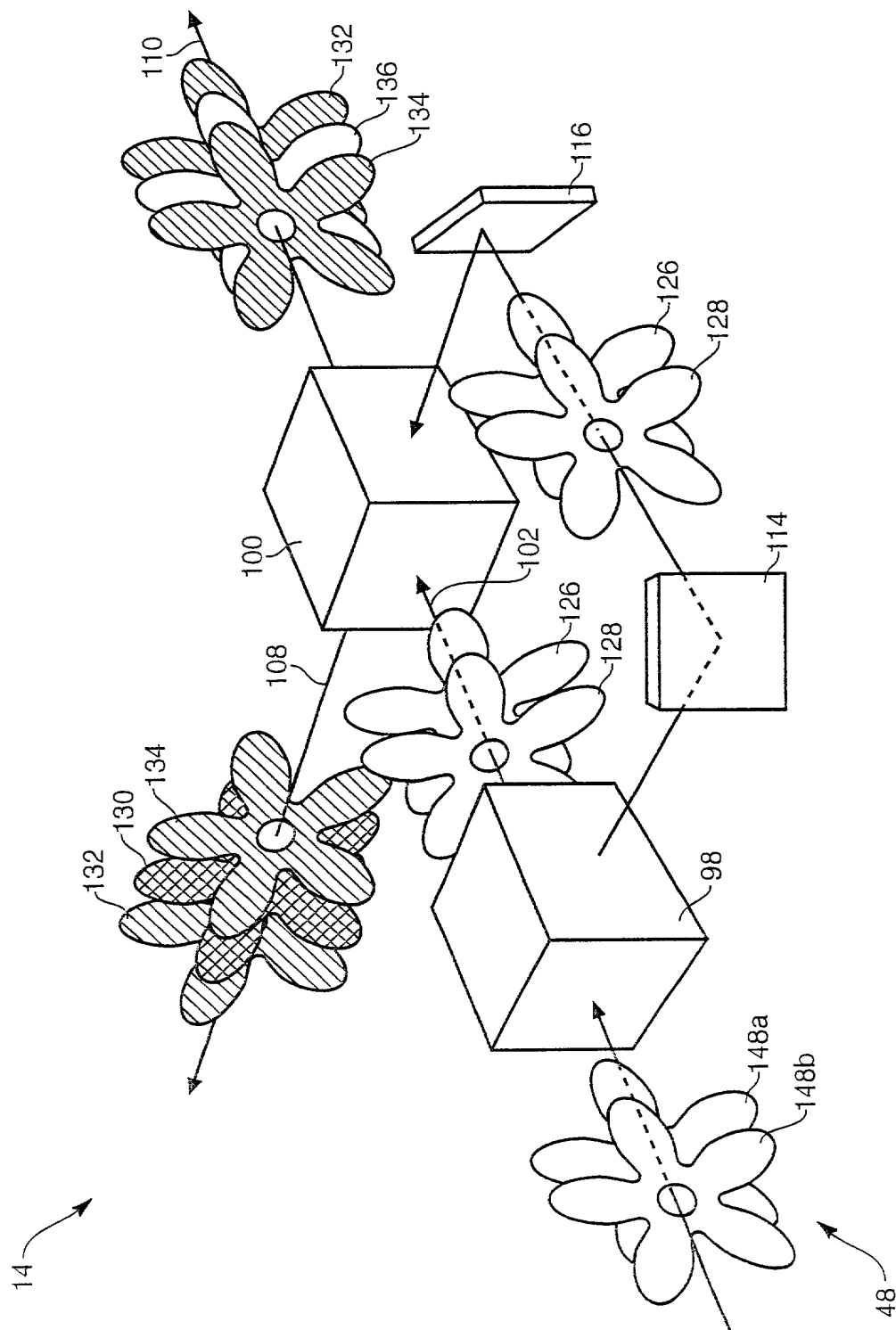
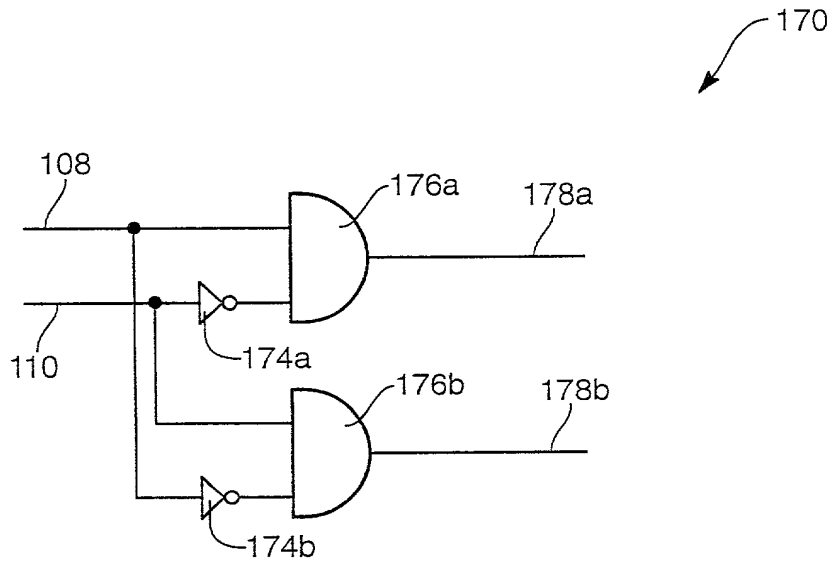
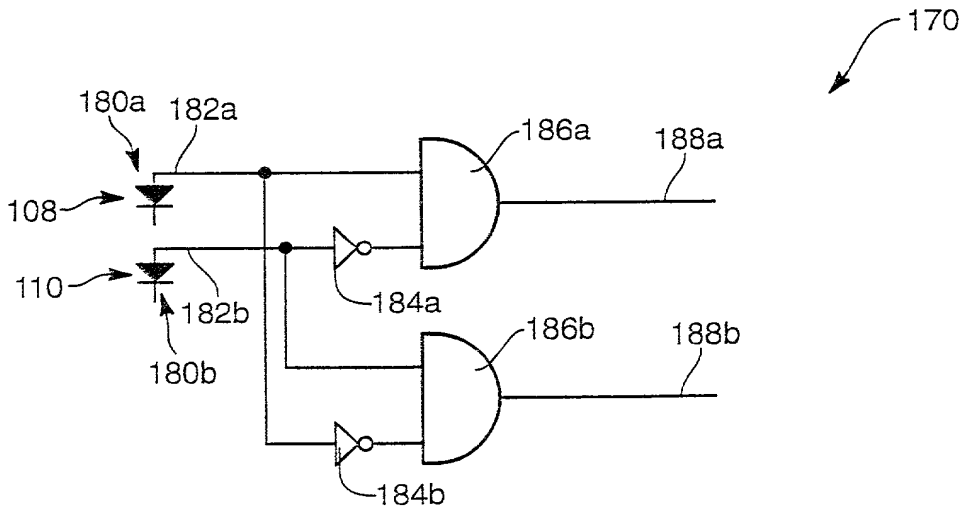


Fig. 21



Photonic Processor
Fig. 22



Electronic Processor
Fig. 23A



Fig. 23B

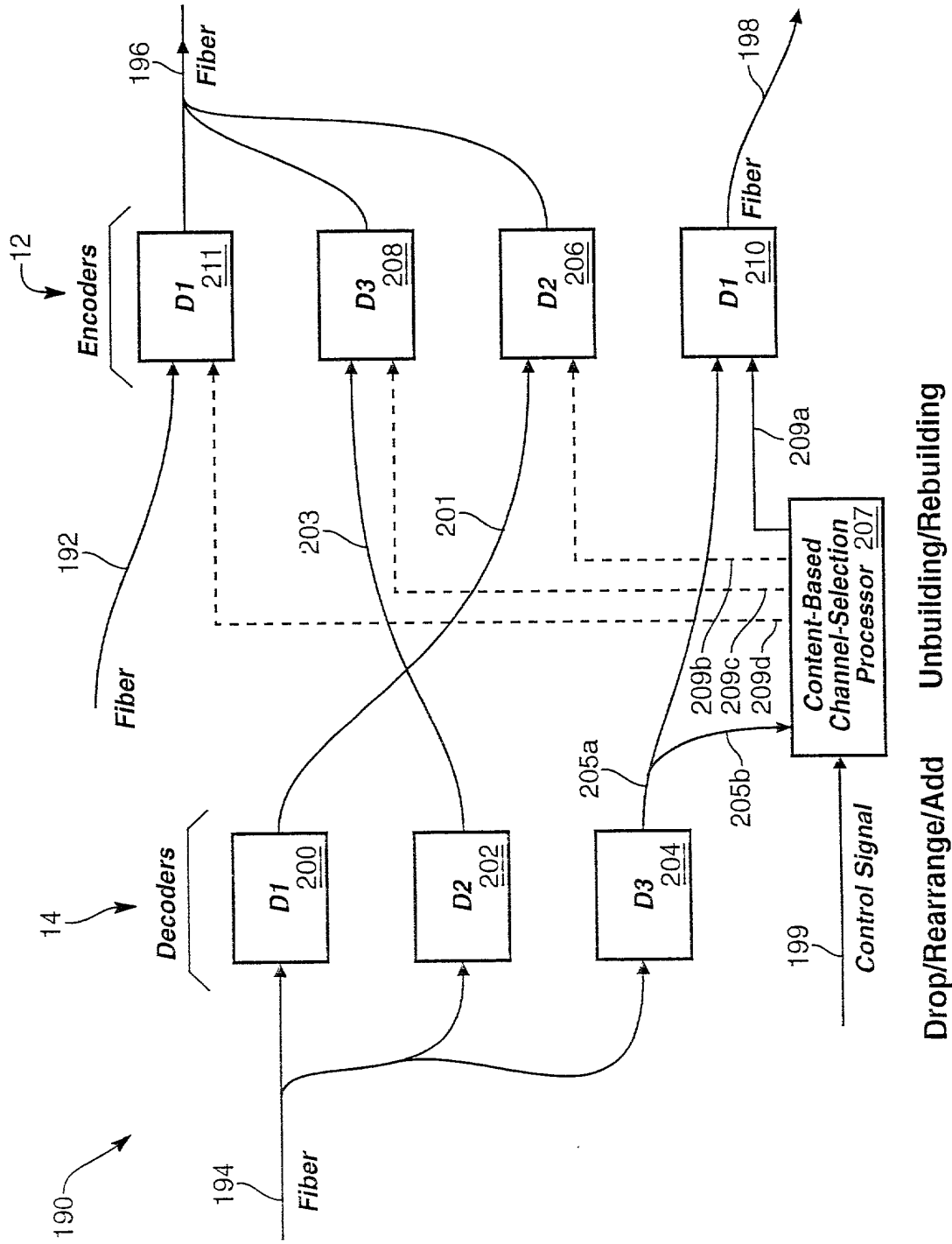
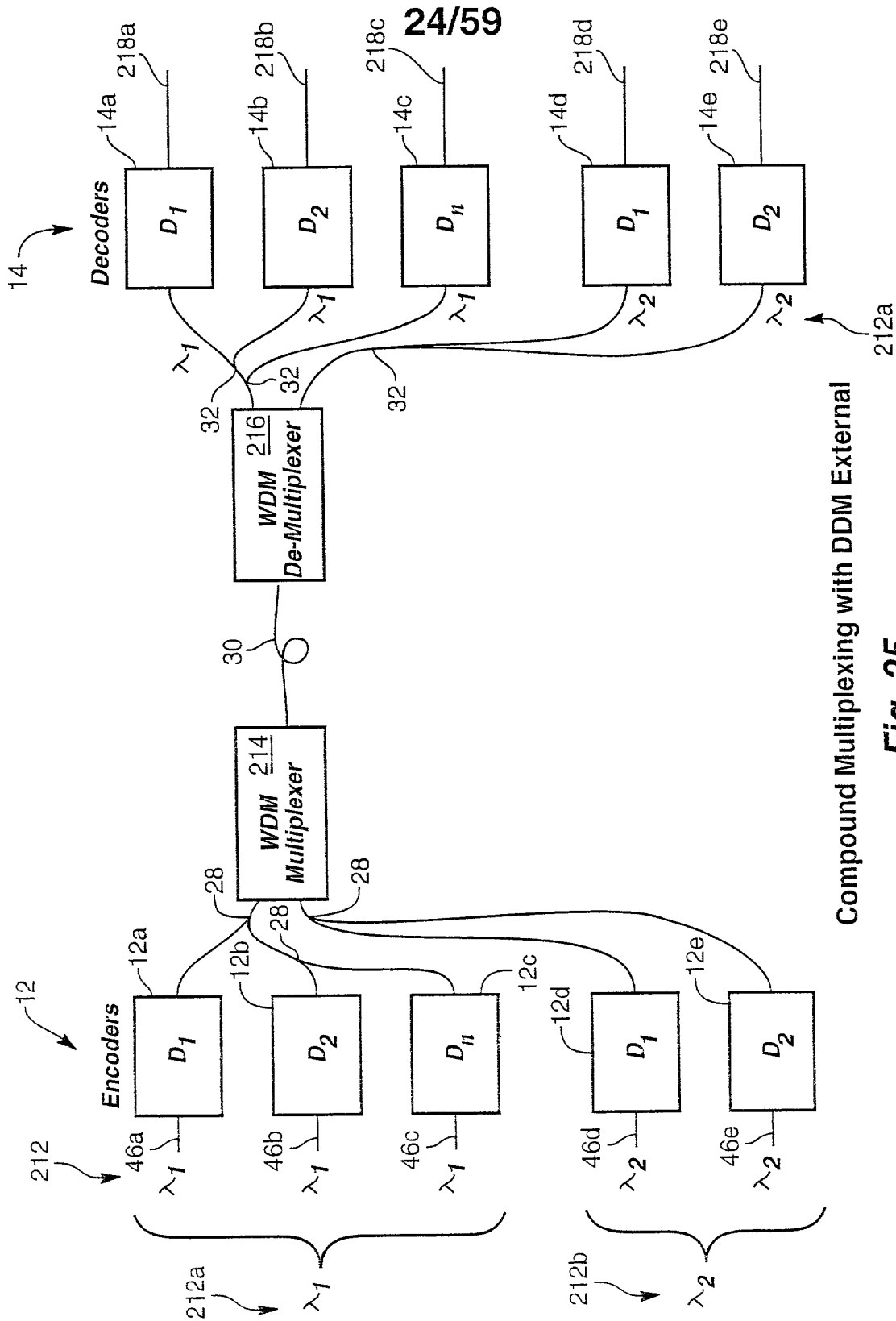


Fig. 24

Drop/Rearrange/Add Unbuilding/Rebuilding



Compound Multiplexing with DDM External

Fig. 25

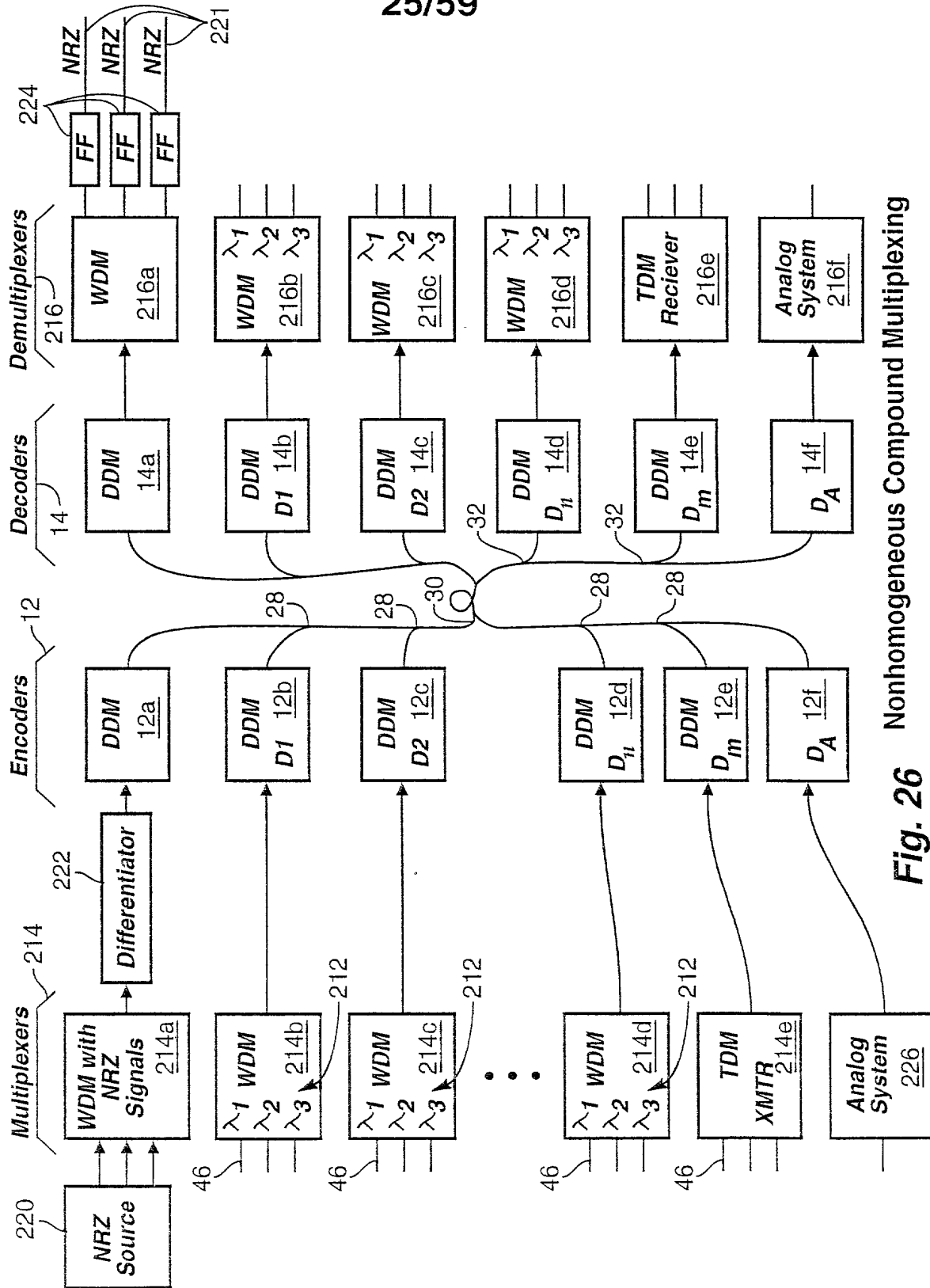
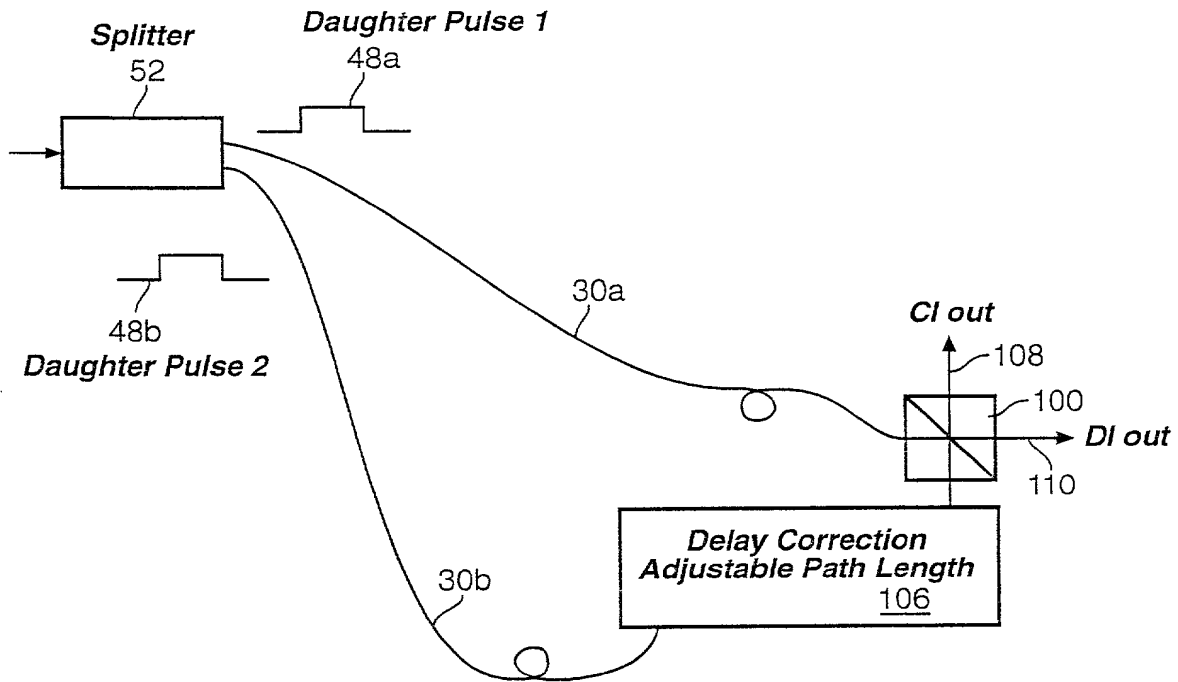


Fig. 26 Nonhomogeneous Compound Multiplexing



Multiple Delay Path

Integrated Delay and
Delay Correction

FIG. 27

Photonic NRZ Interface

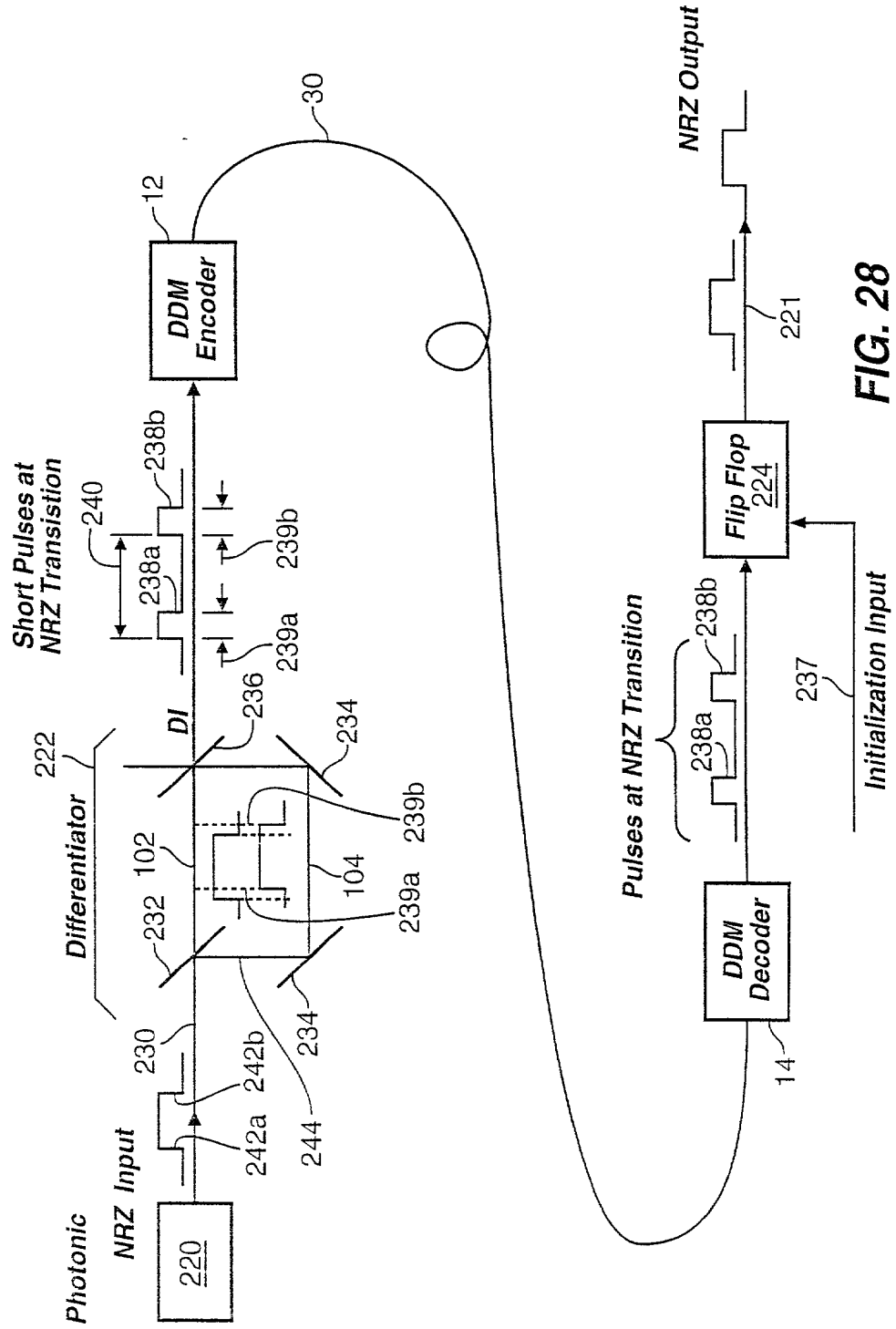


FIG. 28

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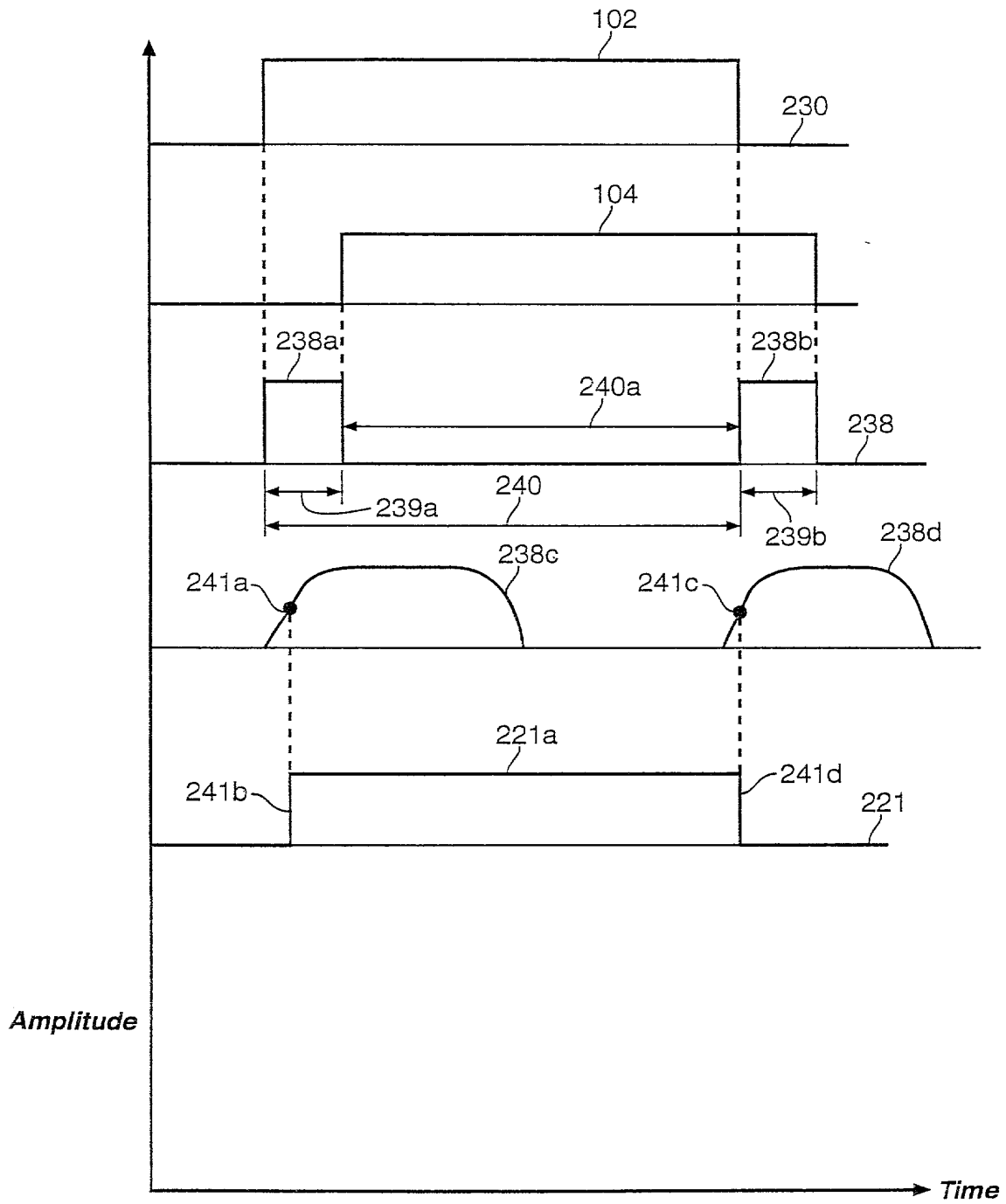
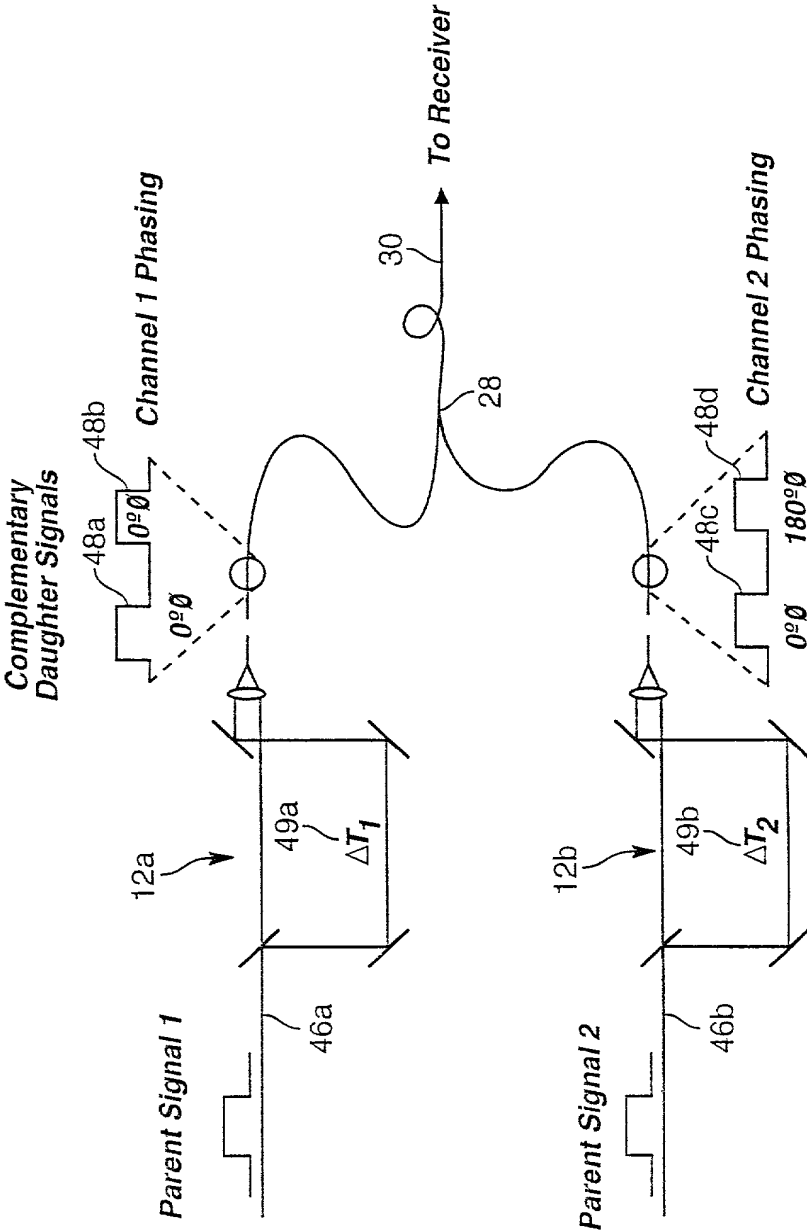


FIG. 29



Phase Sequenced Dual Channel Encoder

FIG. 30

Phase Sequenced Dual Channel Decoder

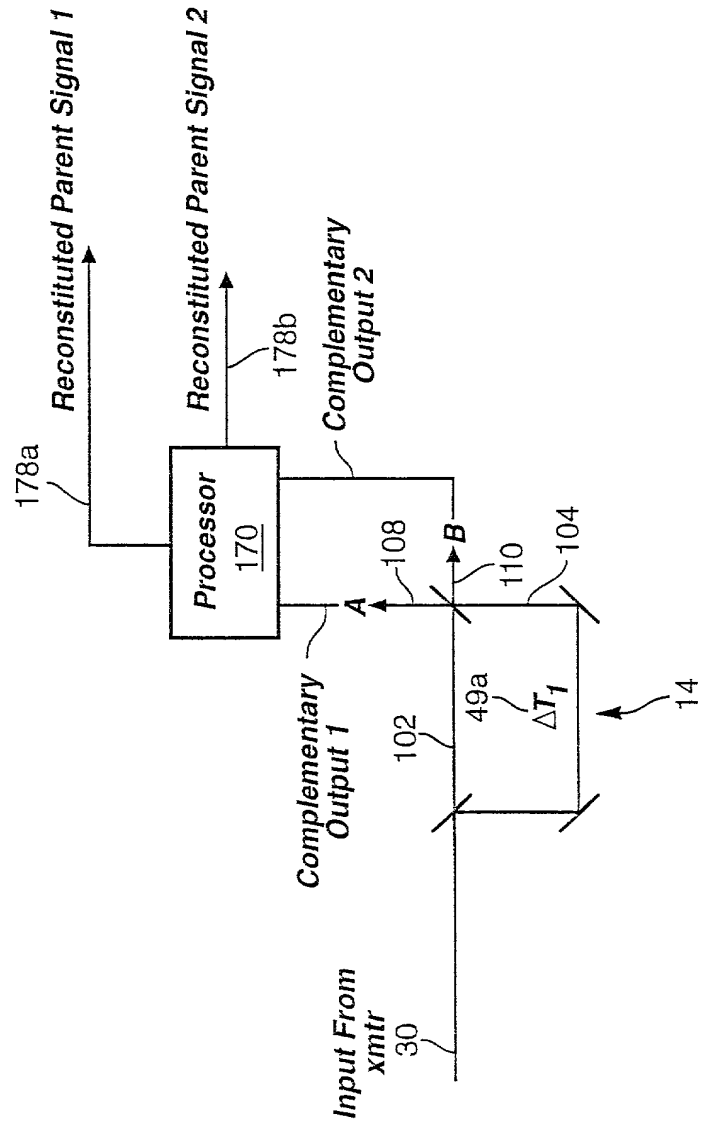
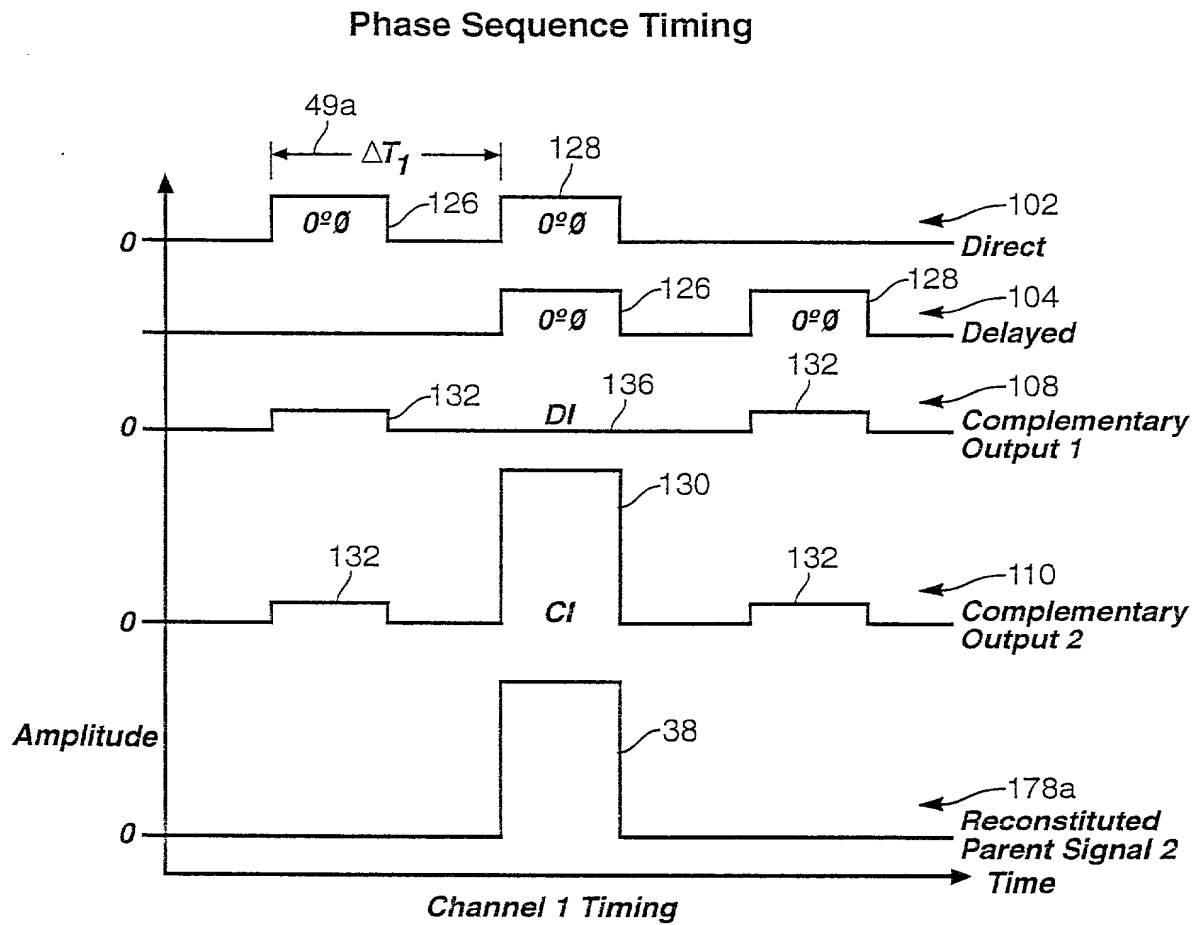


FIG. 31

**FIG. 32**

Phase Sequence Timing

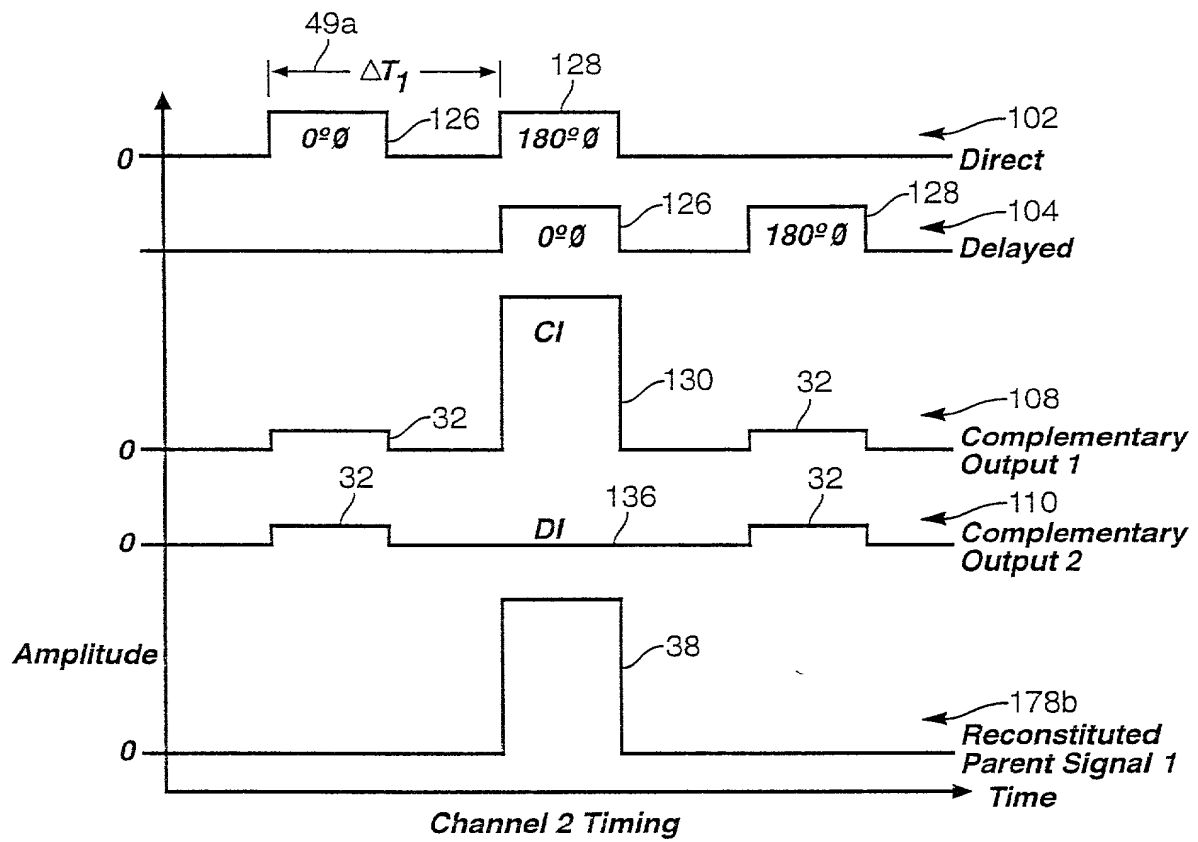


FIG. 33

Quadrature Encoding/Decoding Apparatus

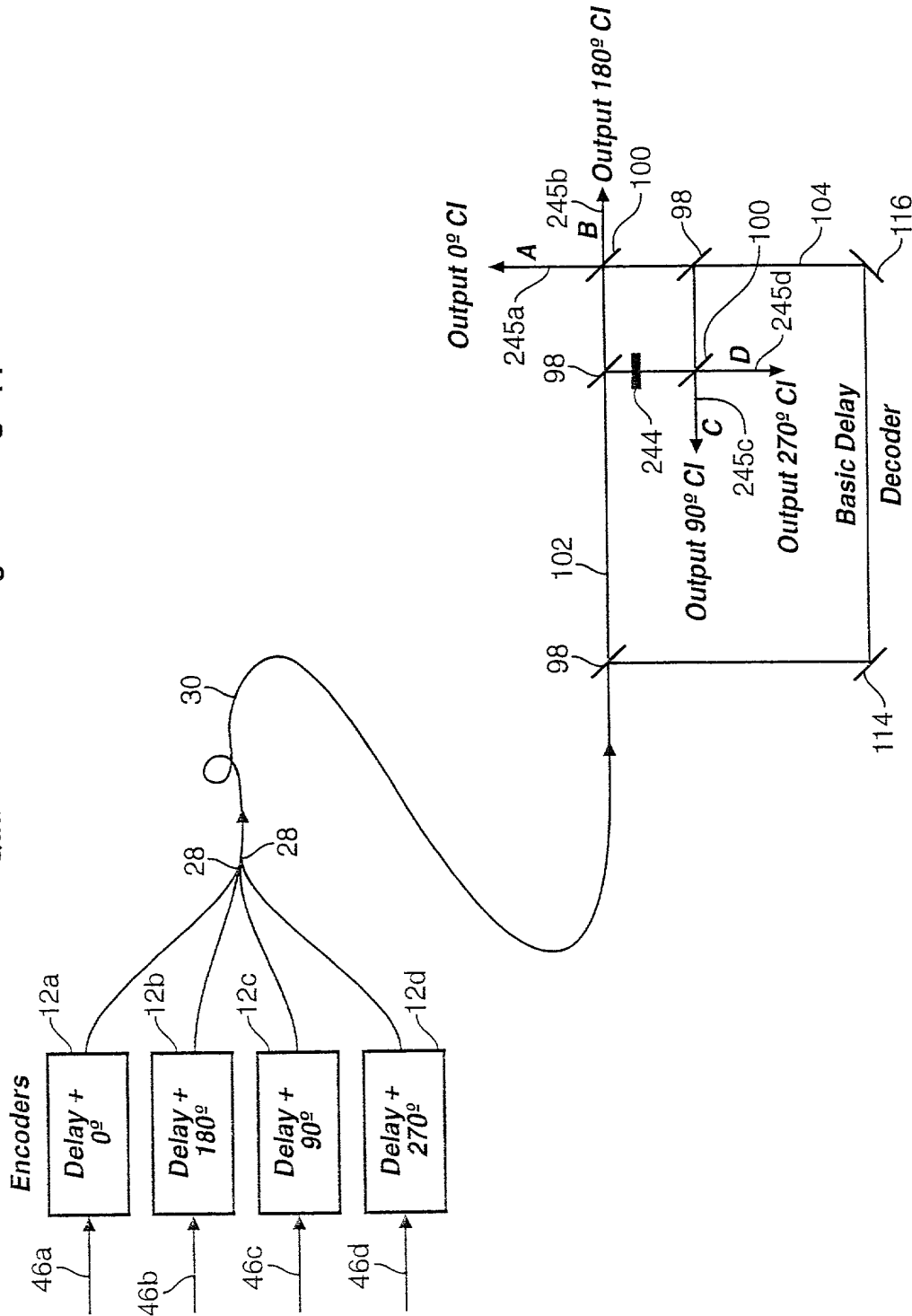


FIG. 34

	<i>Phase of Direct Signal</i>	<i>Phase of Delayed Signal</i>	<i>Quadrature Outputs</i>			
			<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
46a → <i>Channel 1</i>	0	0	<i>CI</i>	<i>DI</i>	<i>C = D</i>	
46b → <i>Channel 2</i>	0	180	<i>DI</i>	<i>CI</i>	<i>C = D</i>	
46c → <i>Channel 3</i>	0	90	<i>A = B</i>		<i>CI</i>	<i>DI</i>
46d → <i>Channel 4</i>	0	270	<i>A = B</i>		<i>DI</i>	<i>CI</i>

245a

245b

245c

245d

FIG. 35

Quadrature Wave Forms For One Channel

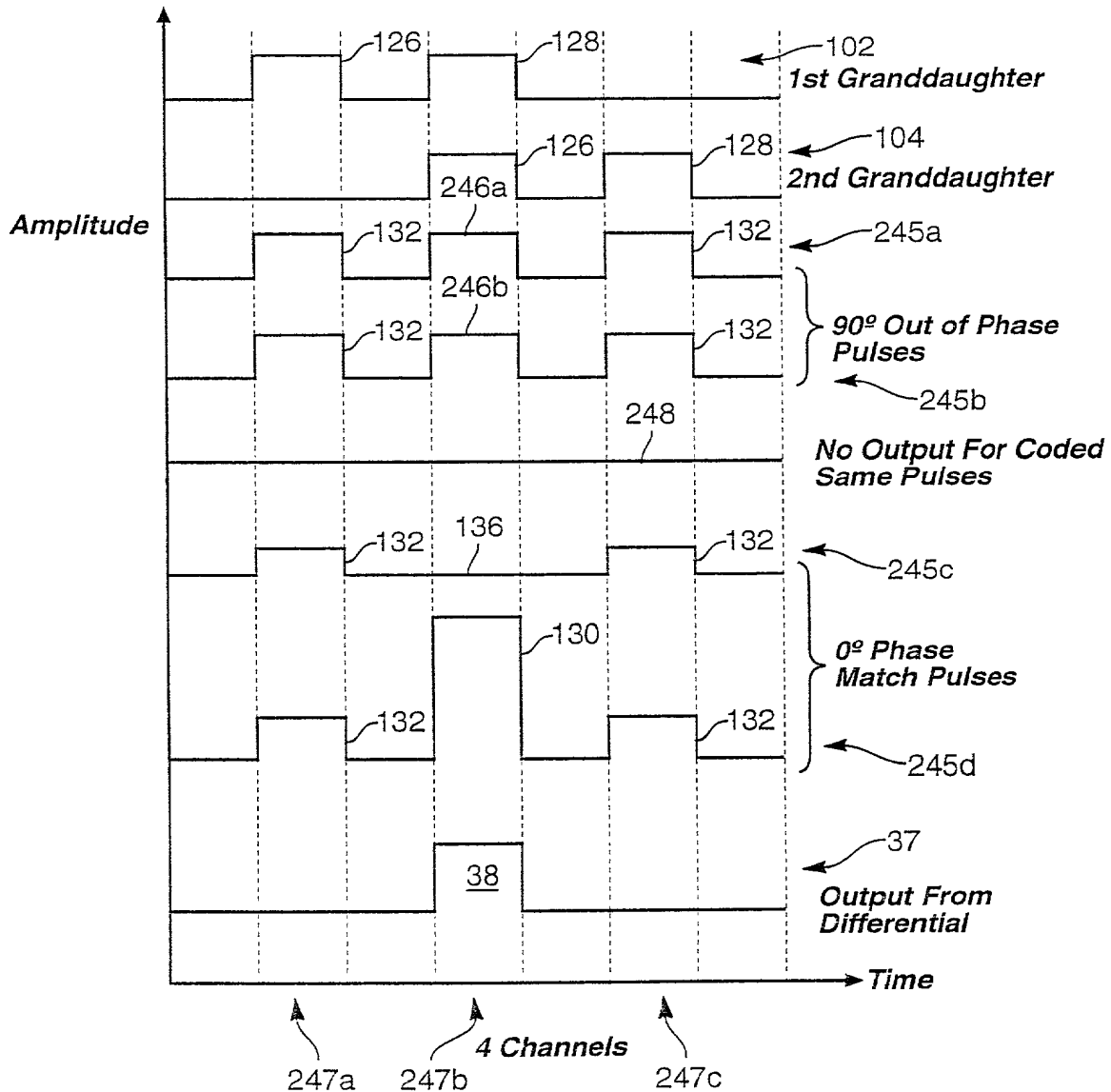


FIG. 36

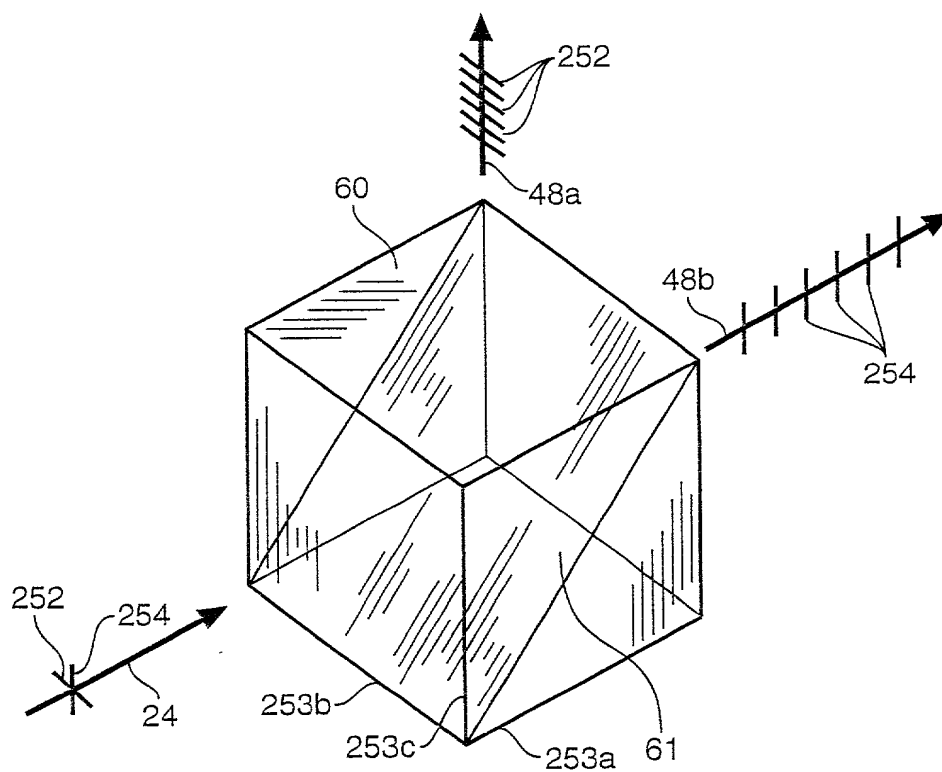


FIG. 37A

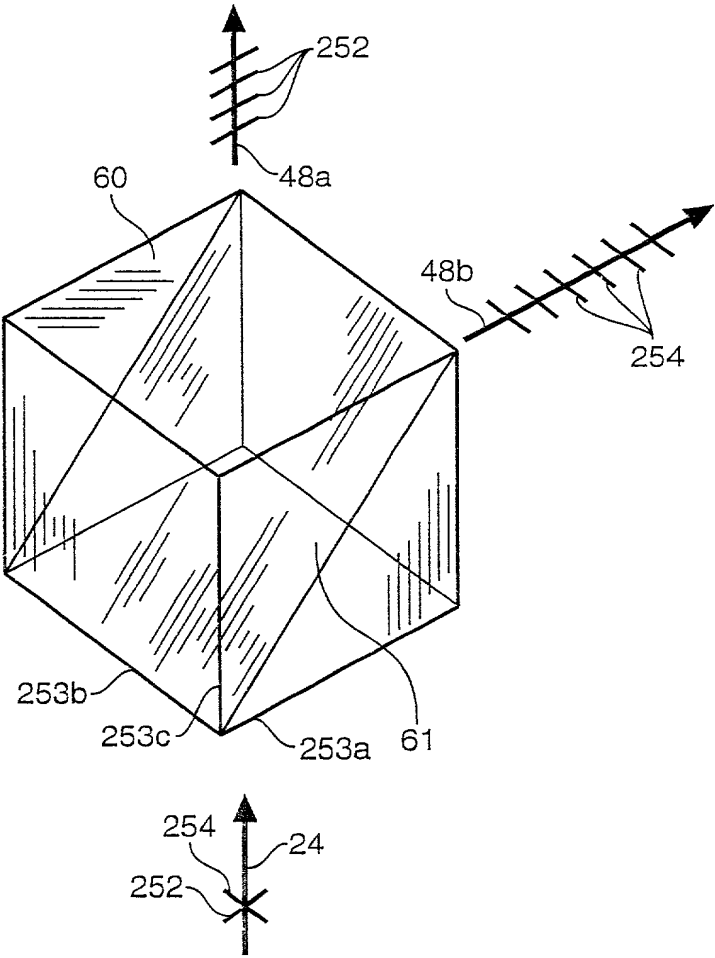
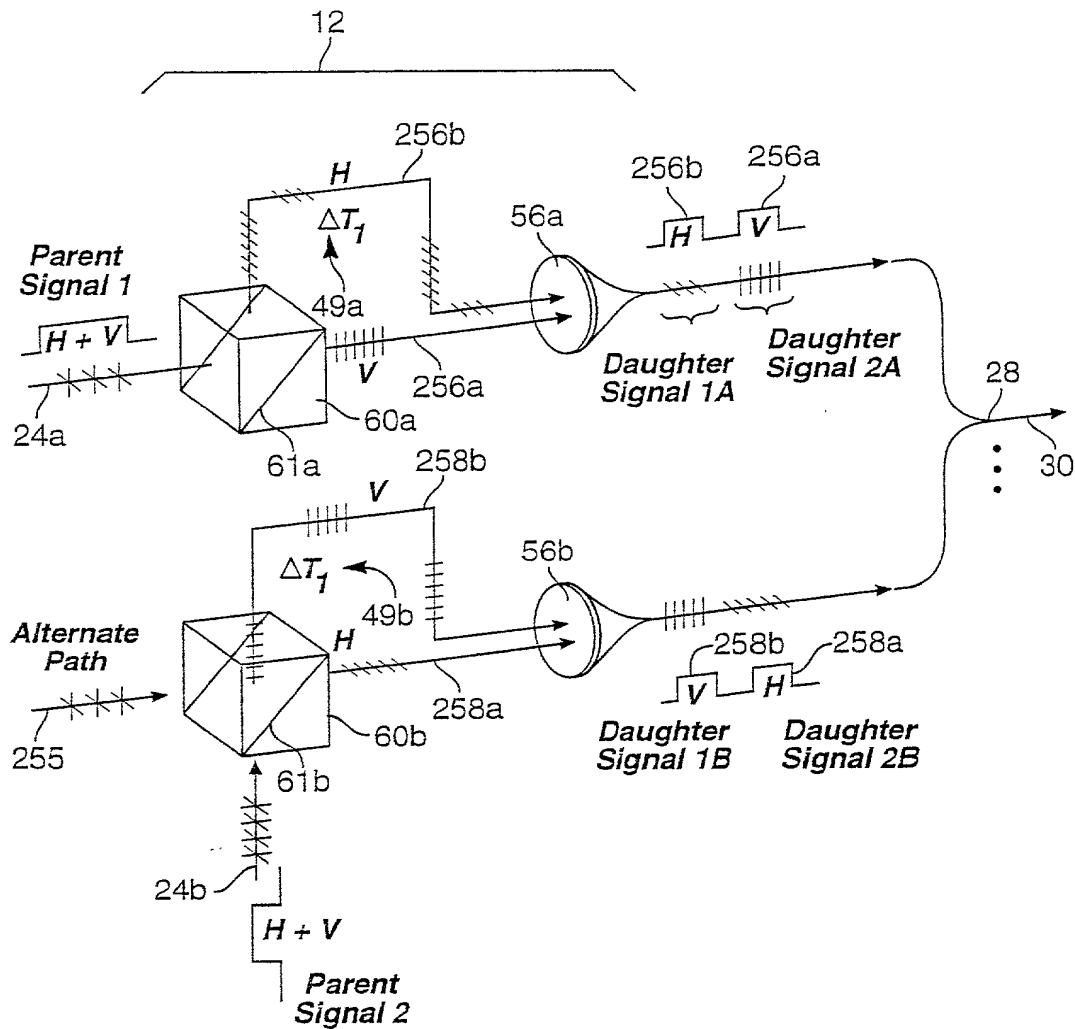


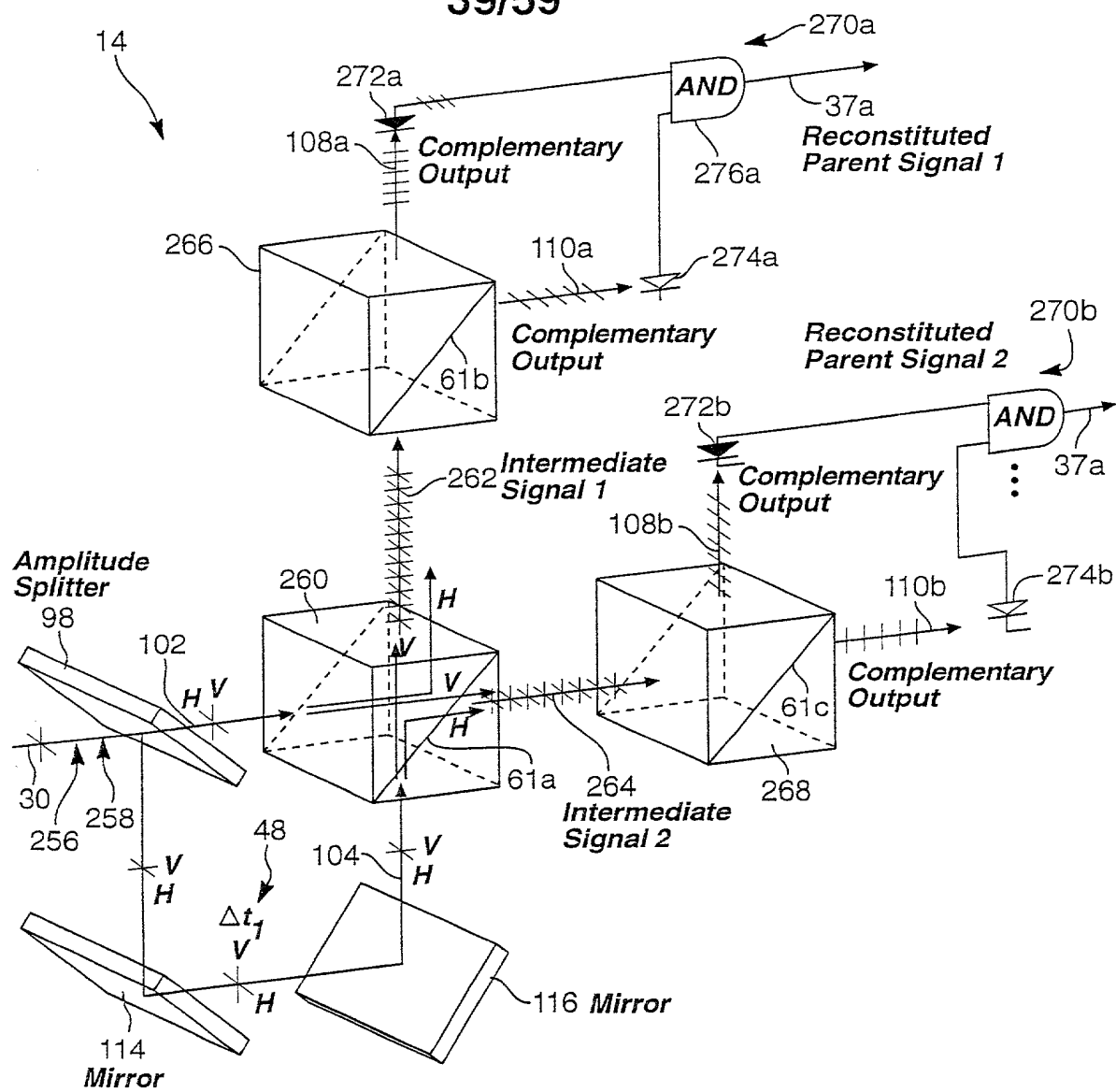
FIG. 37B



Double Encoder With Polarizations Sequenced to Differentiate 2 Channels Having the Same Time Delay Between Daughter Signals

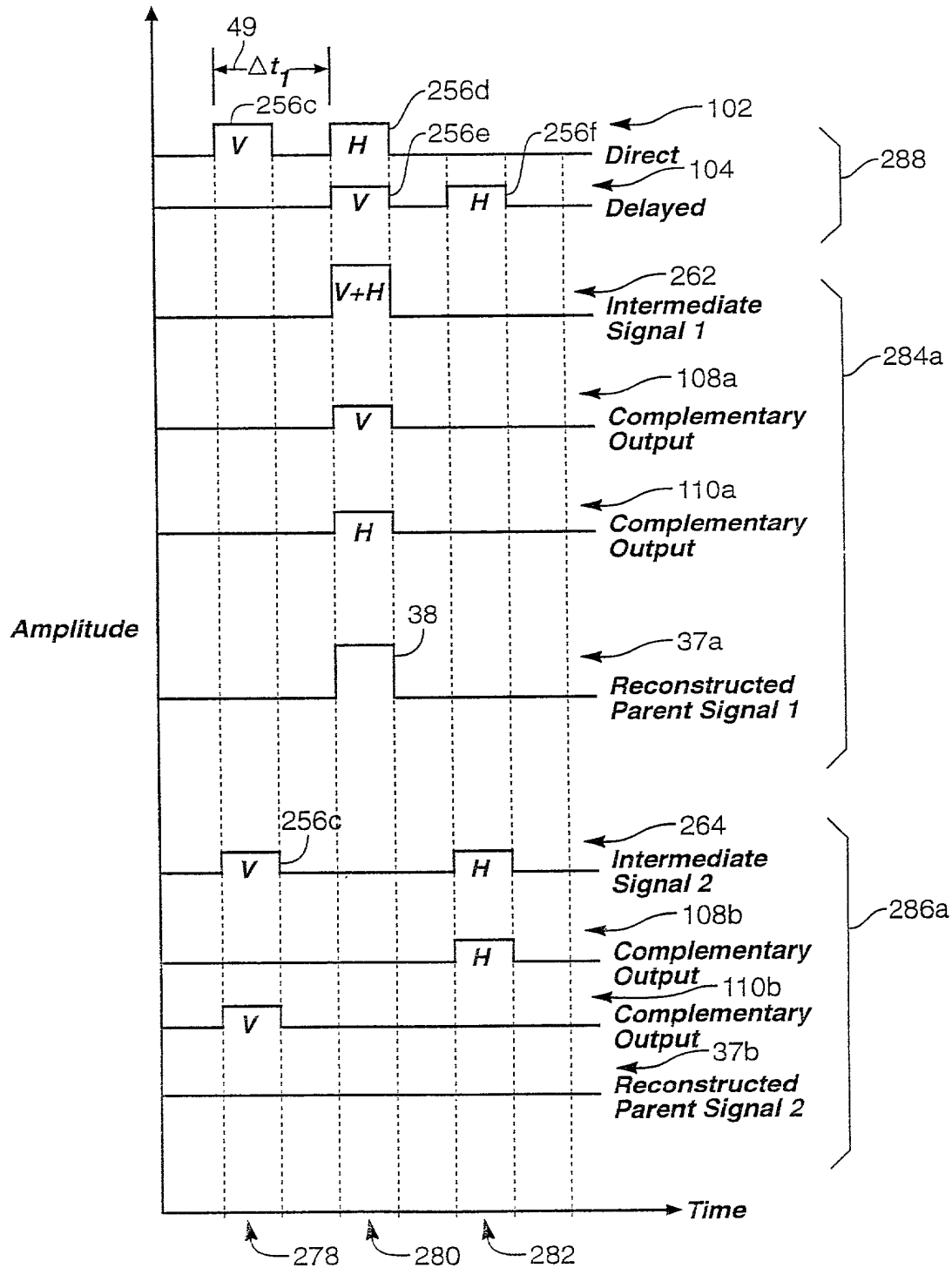
FIG. 38

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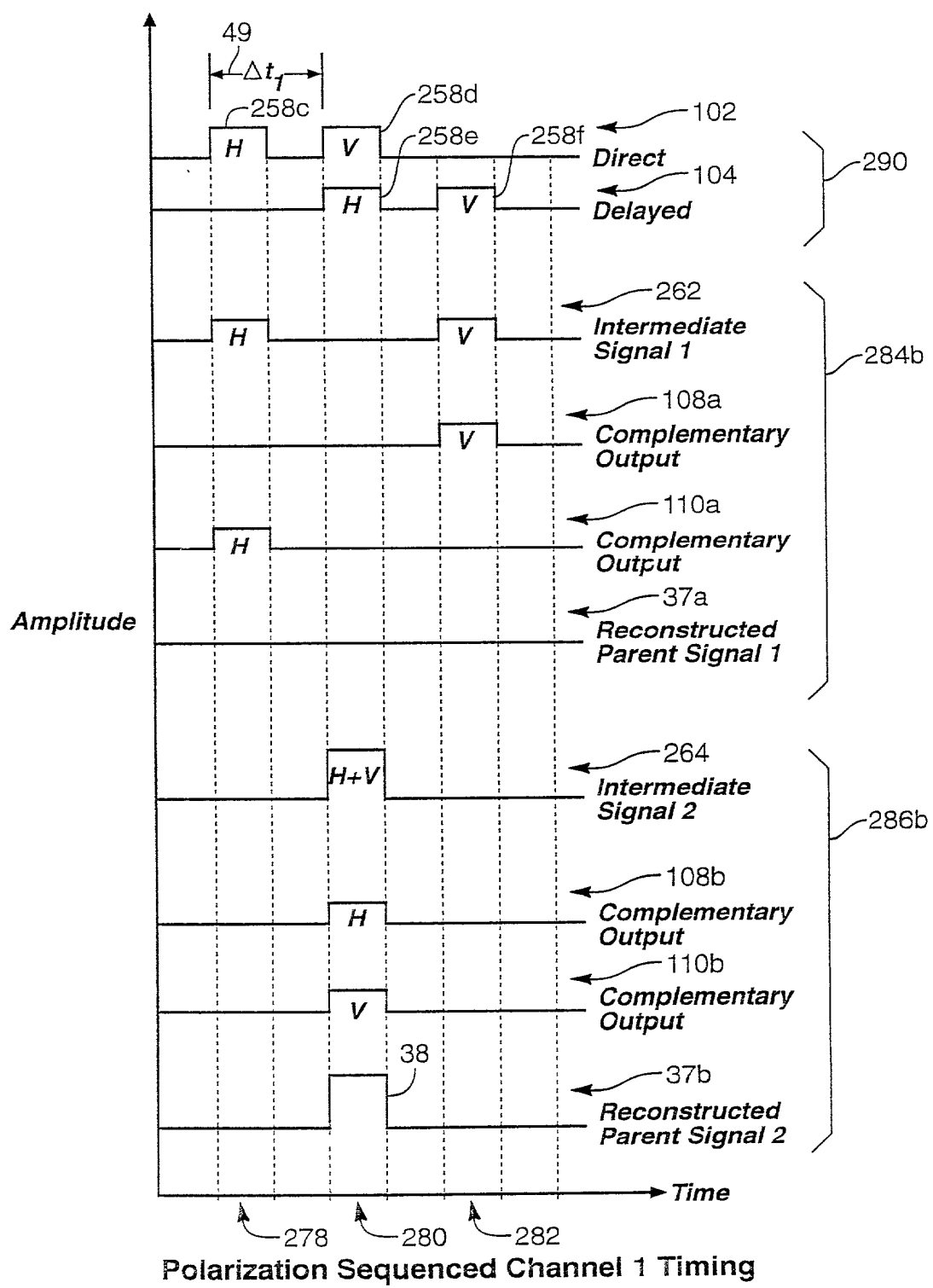
Double Decoder With Polarizations Sequenced to Differentiate 2 Channels Having the Same Time Delay Between Daughter Signals

FIG. 39



Polarization Sequenced Channel 1 Timing

FIG. 40



Polarization Sequenced Channel 1 Timing

FIG. 41

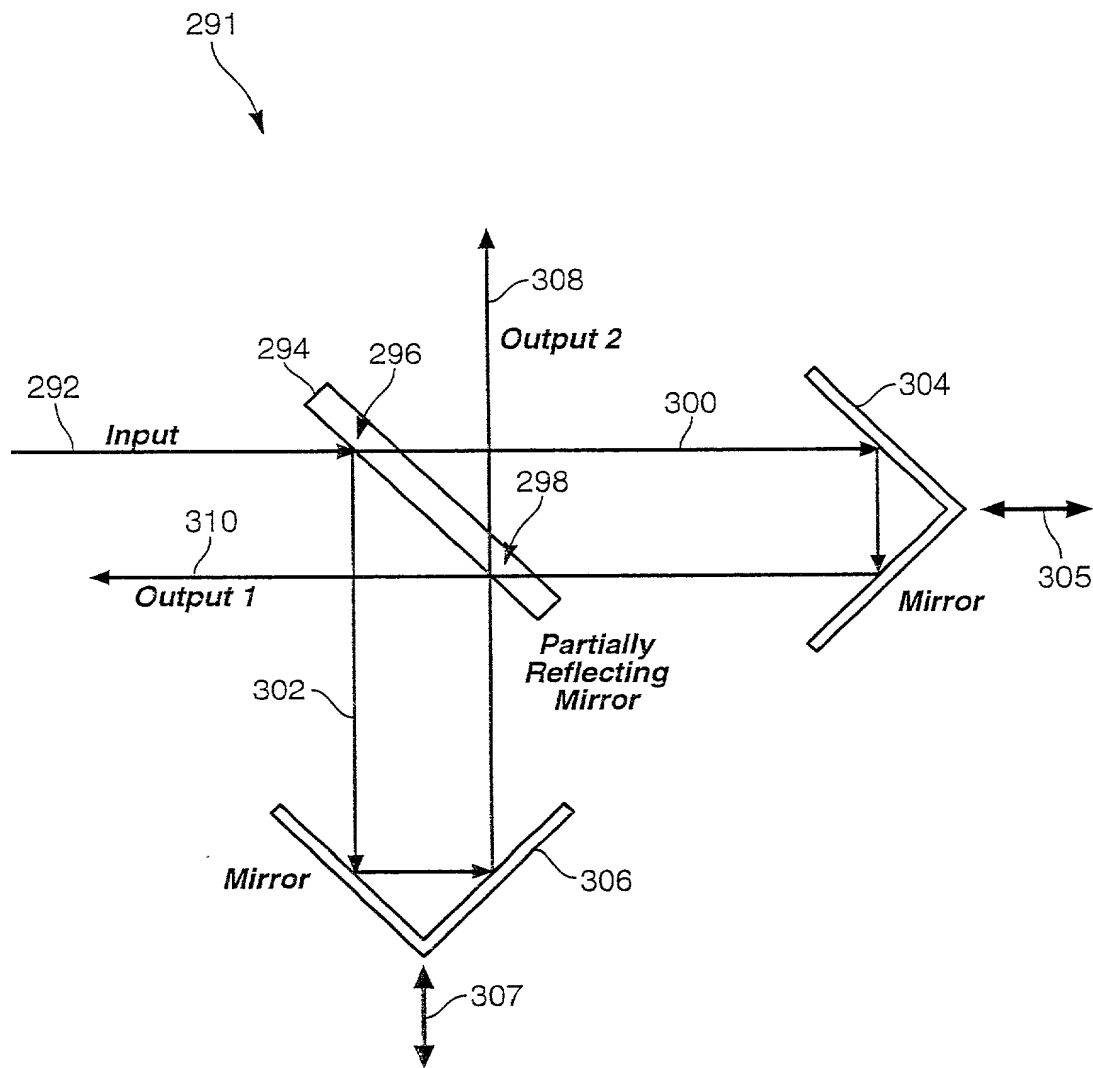


FIG. 42

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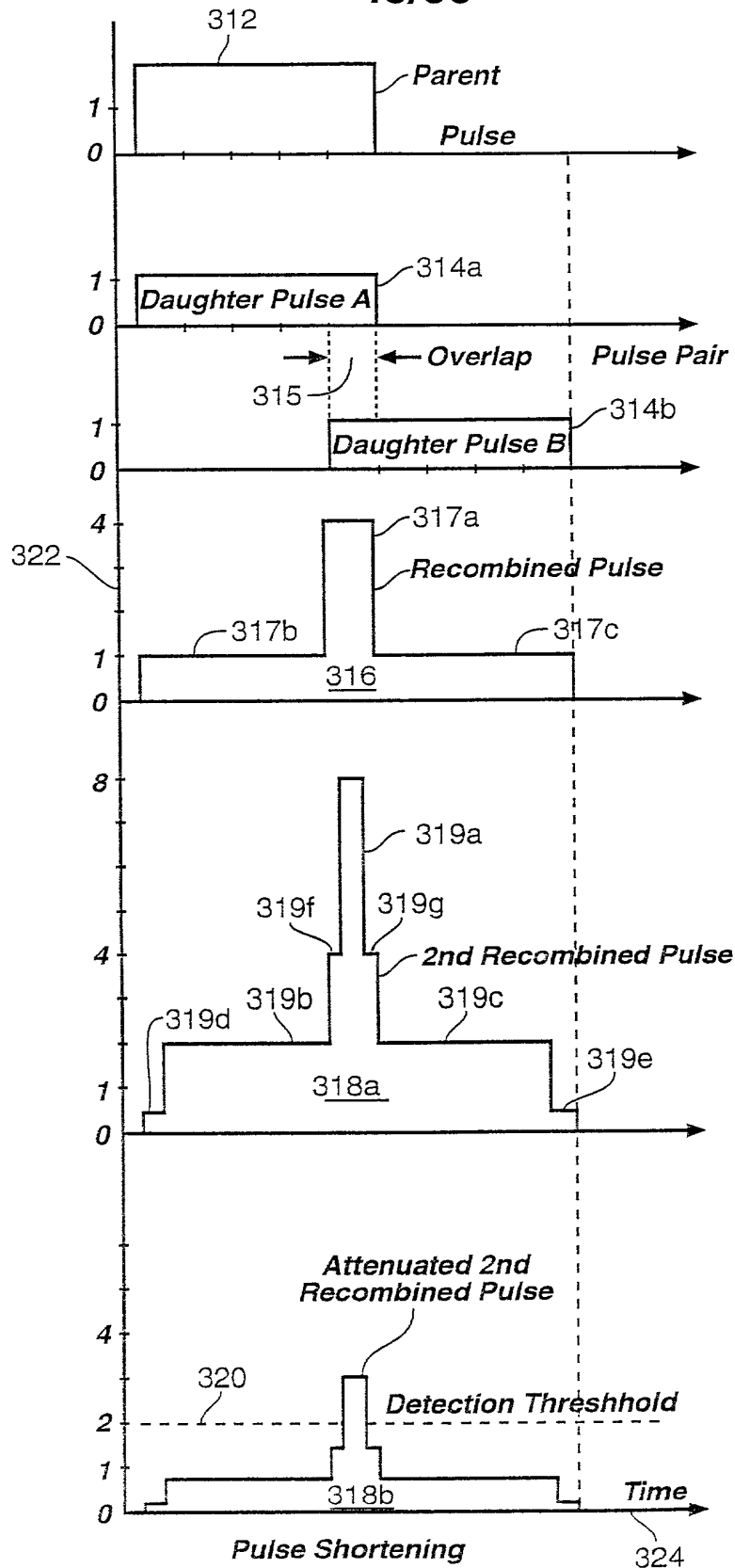


FIG. 43

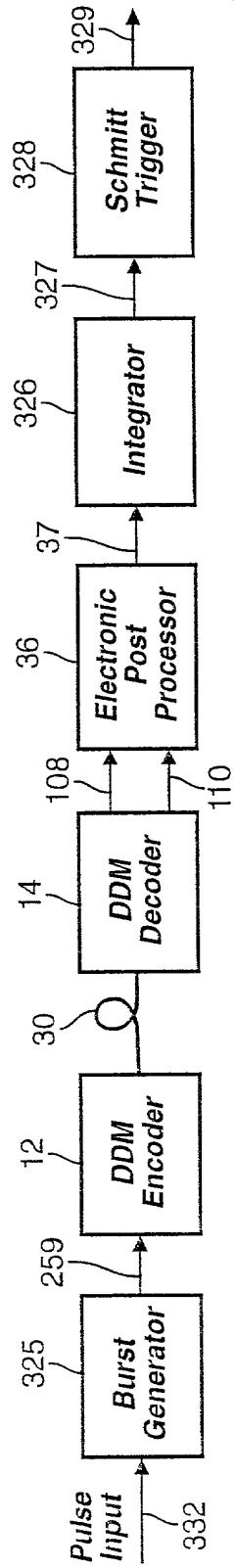


FIG. 44

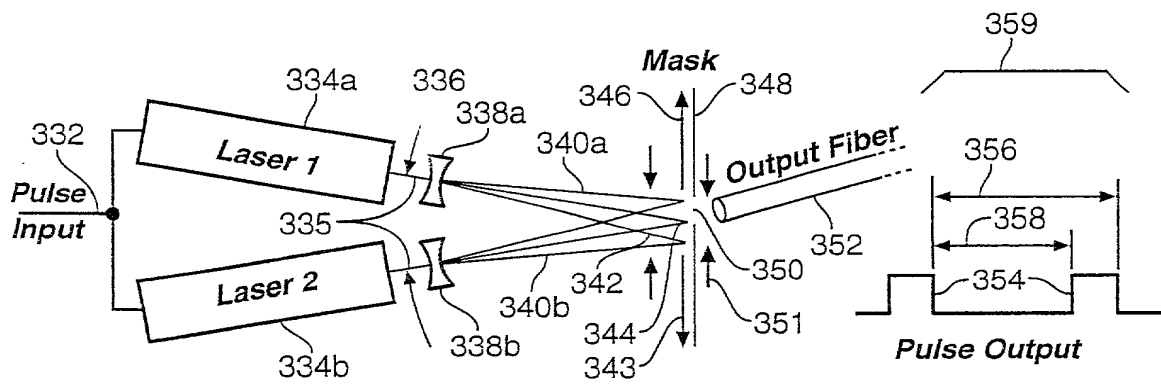


FIG. 45

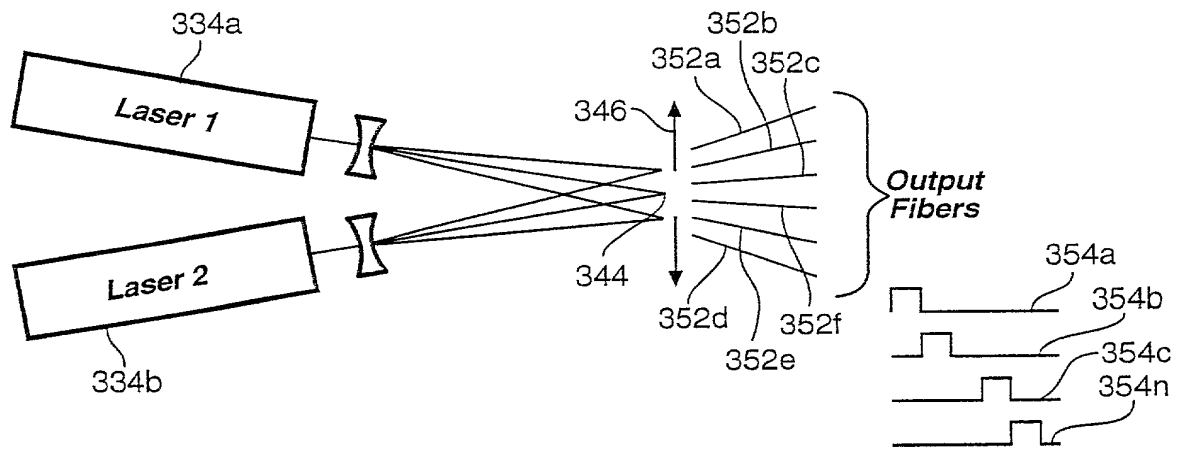


FIG. 46

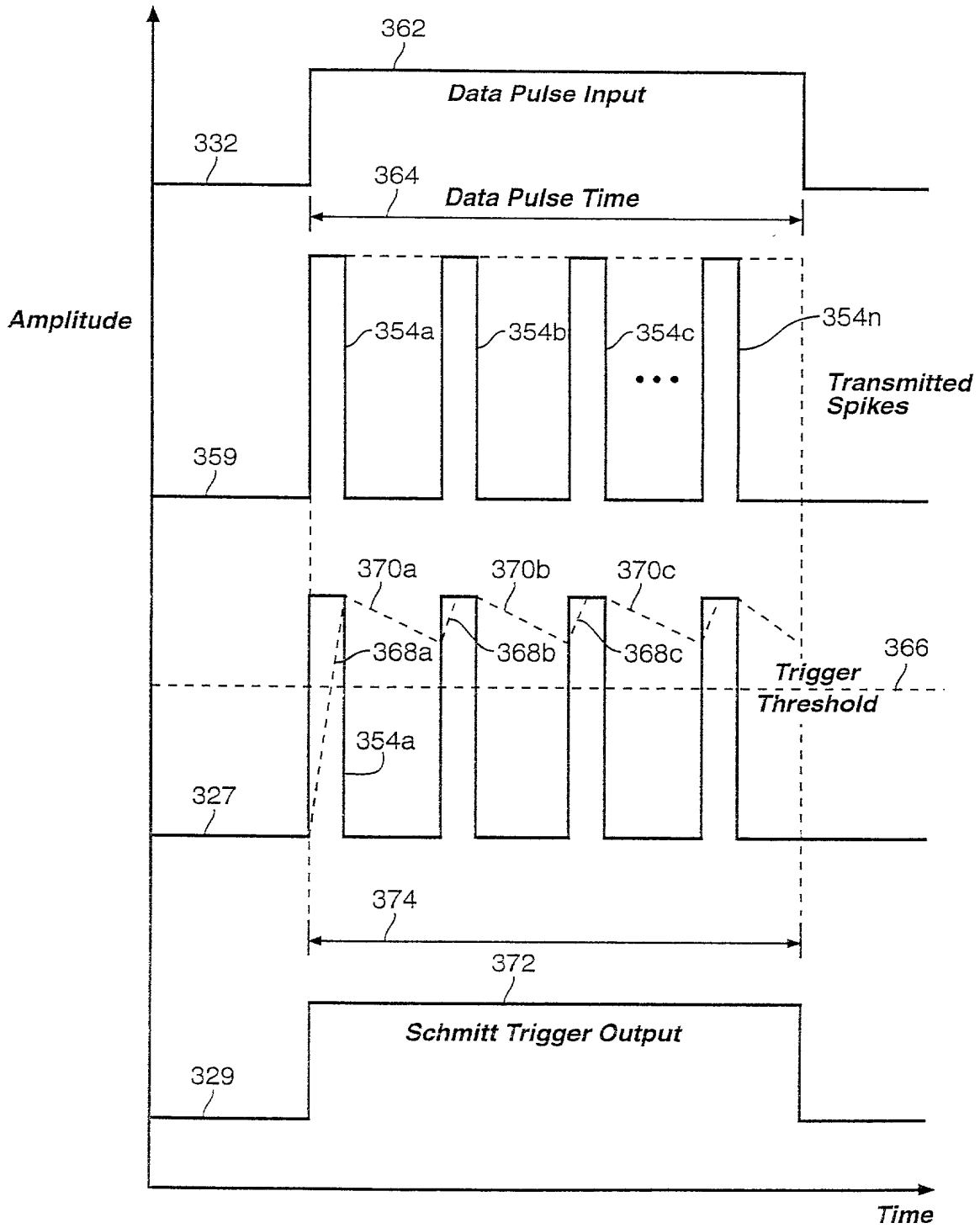


FIG. 47

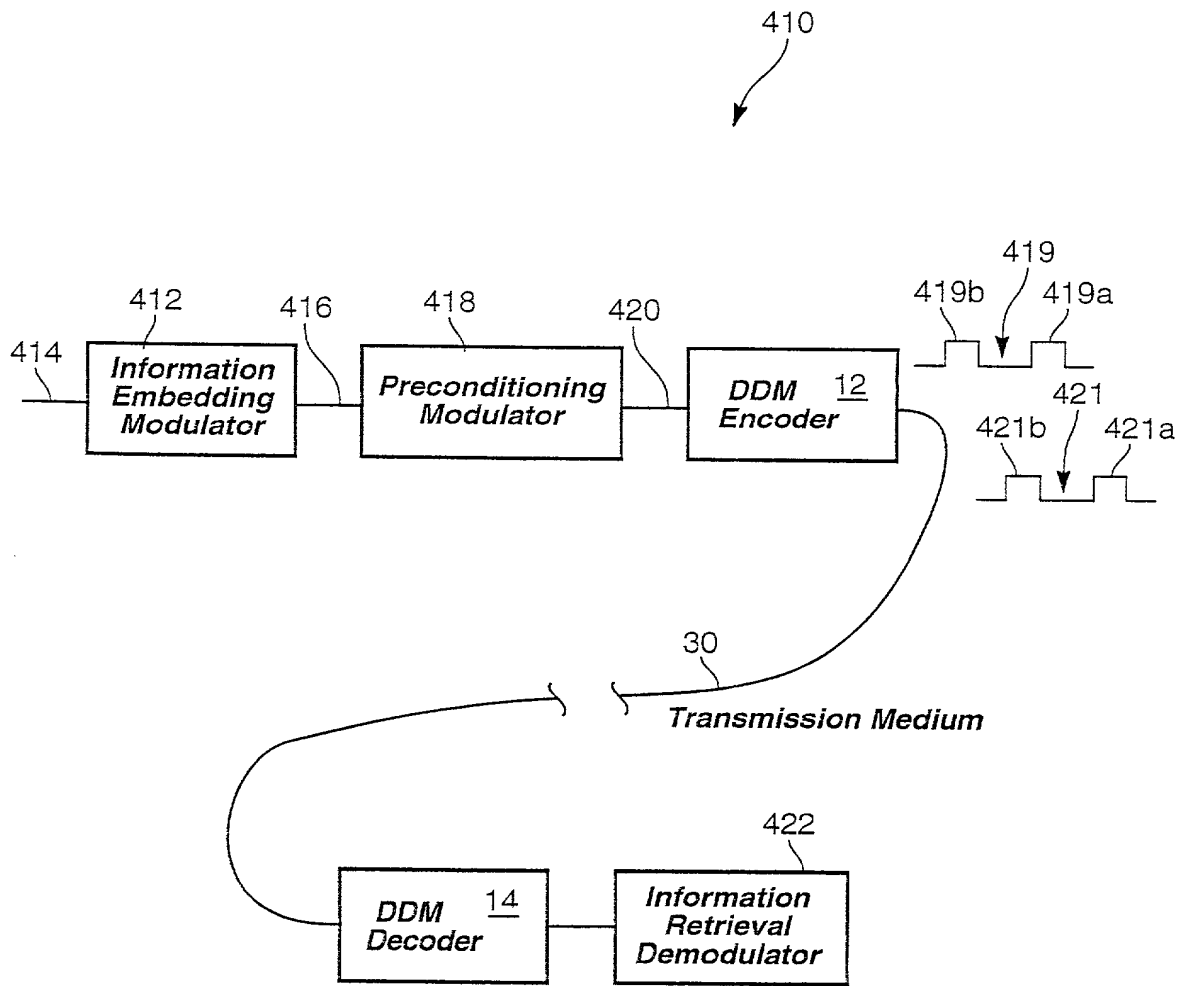


FIG. 48

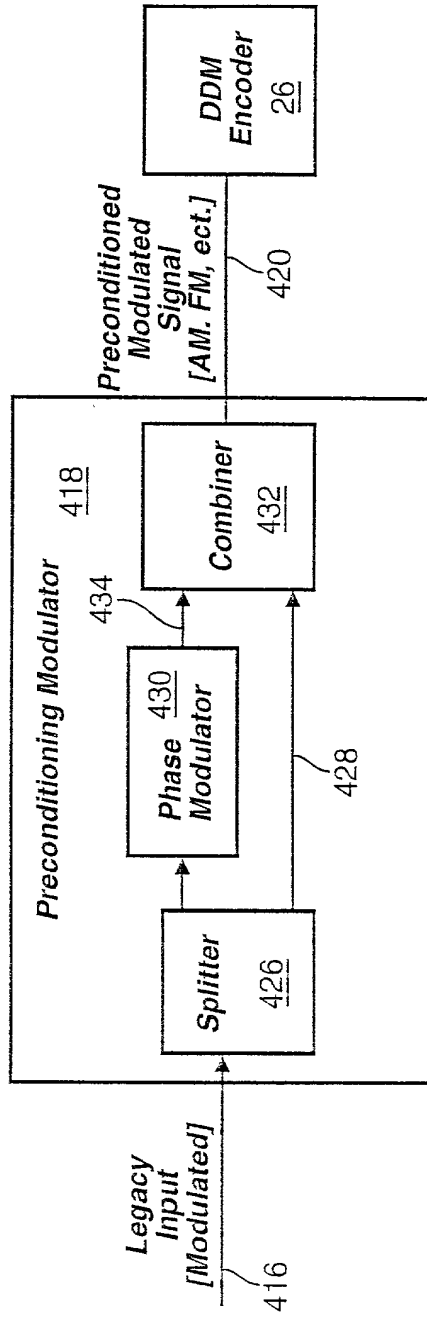


FIG. 49

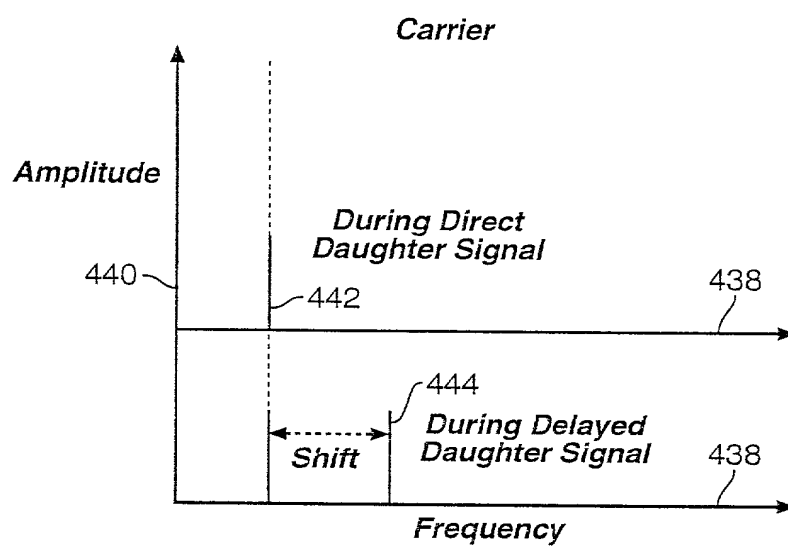


FIG. 50

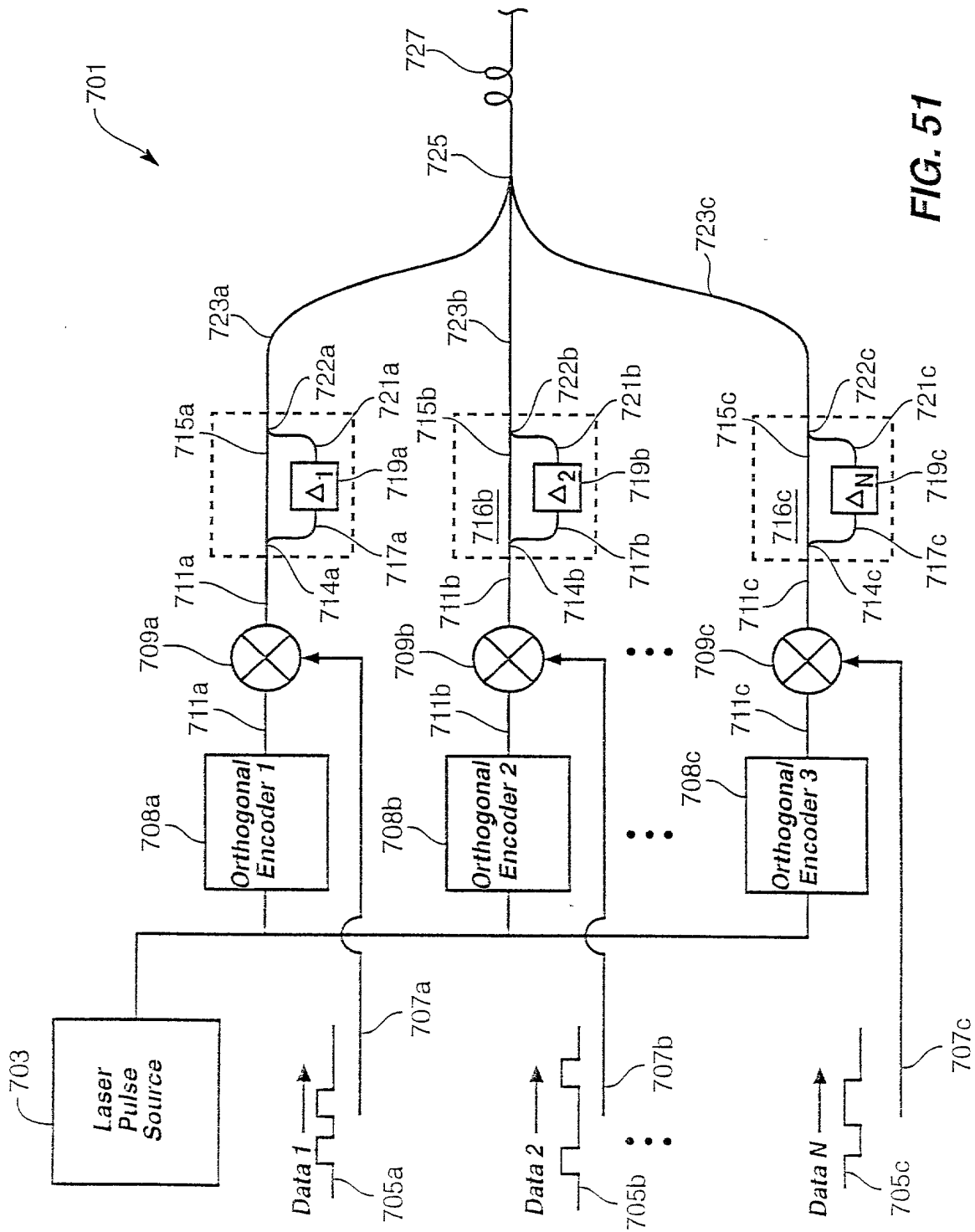


FIG. 51

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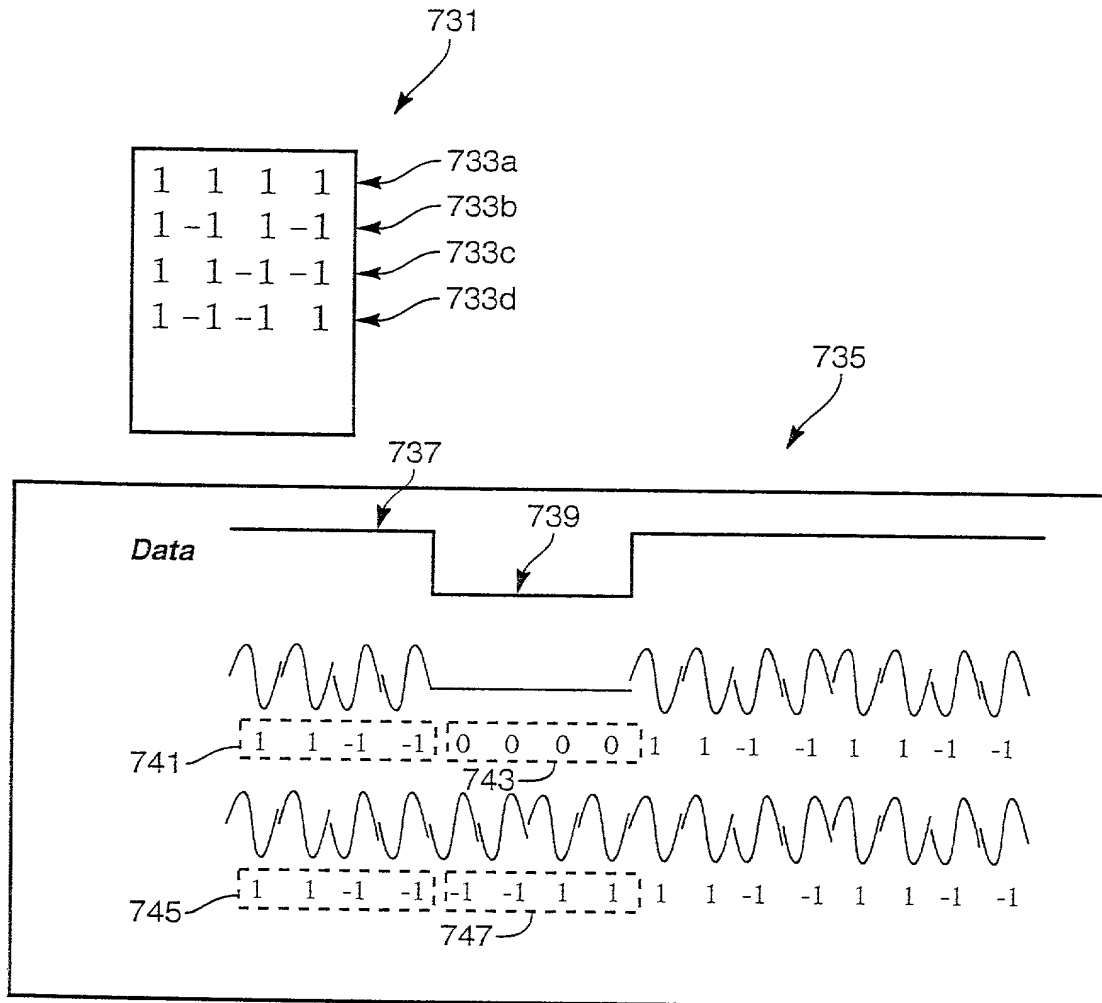


FIG. 52

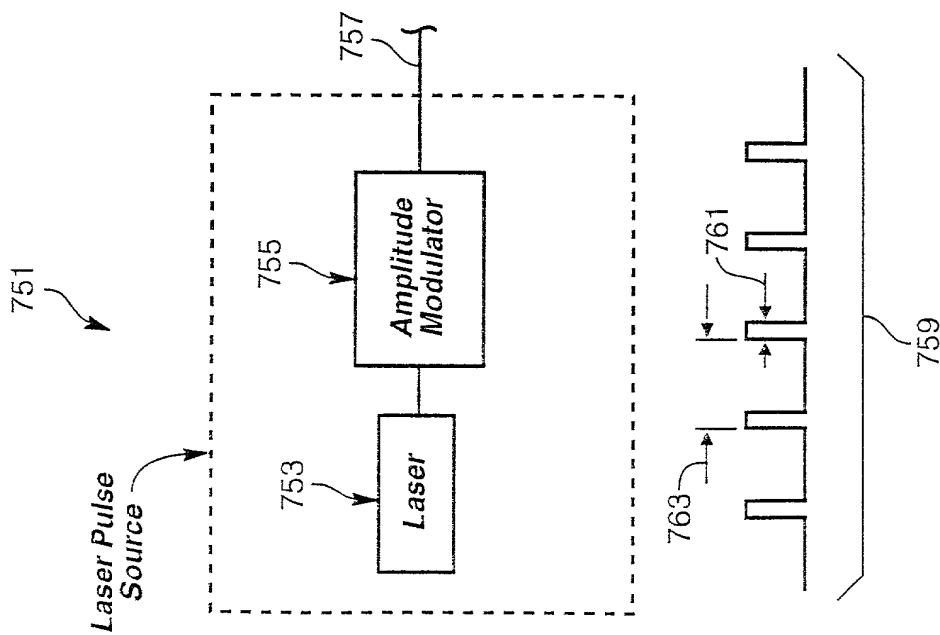


FIG. 53

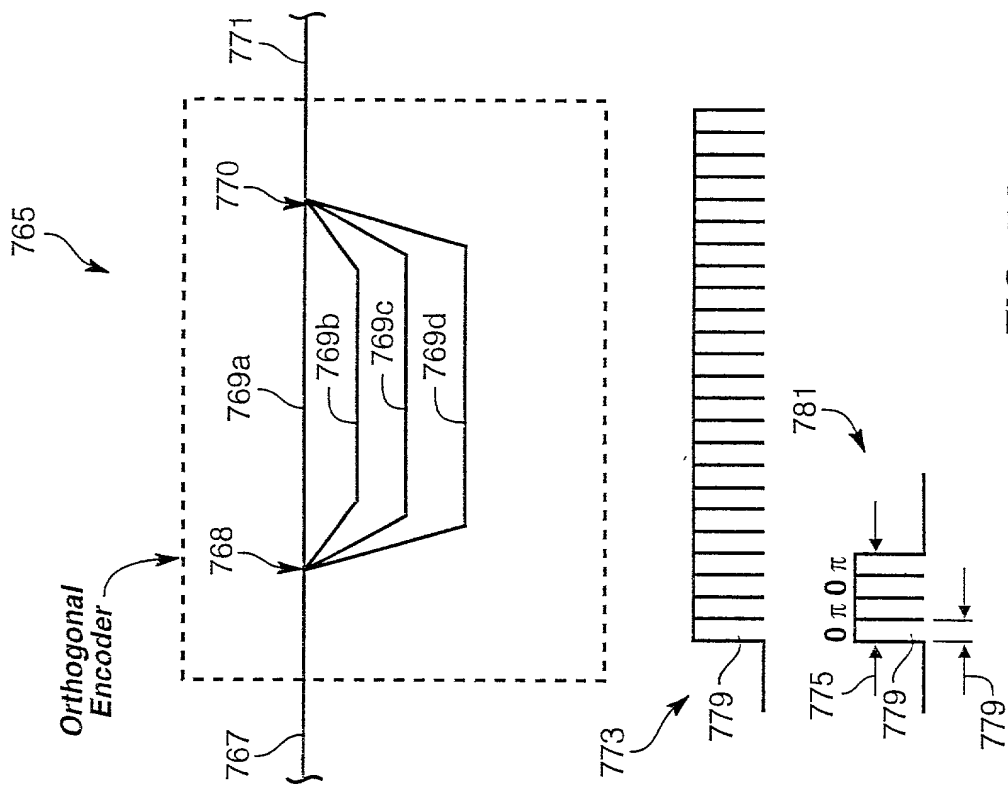
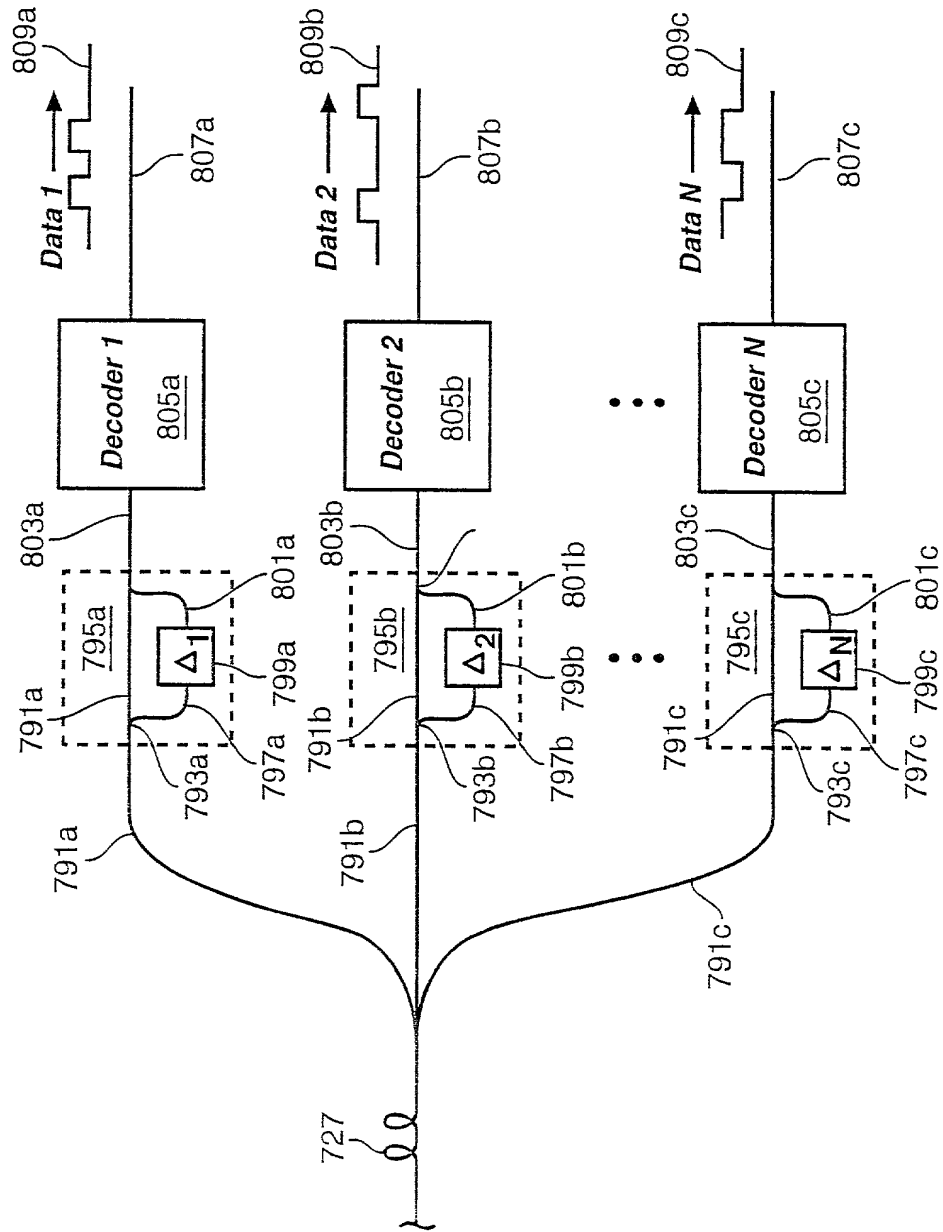


FIG. 54



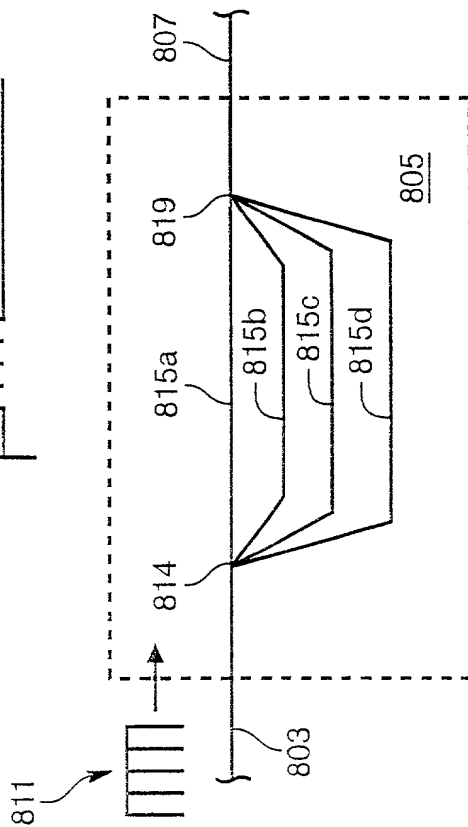
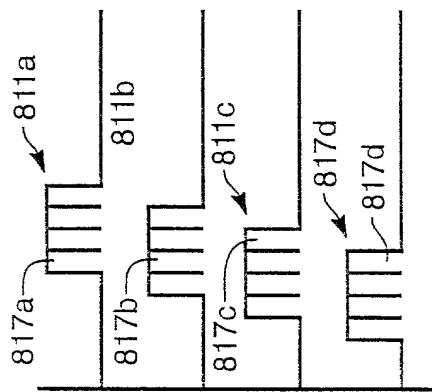


FIG. 56

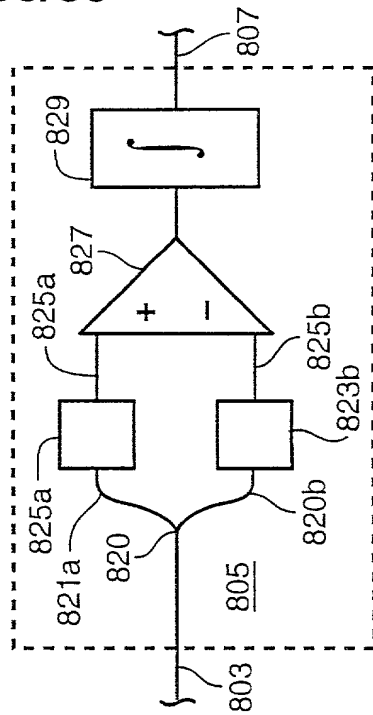


FIG. 57

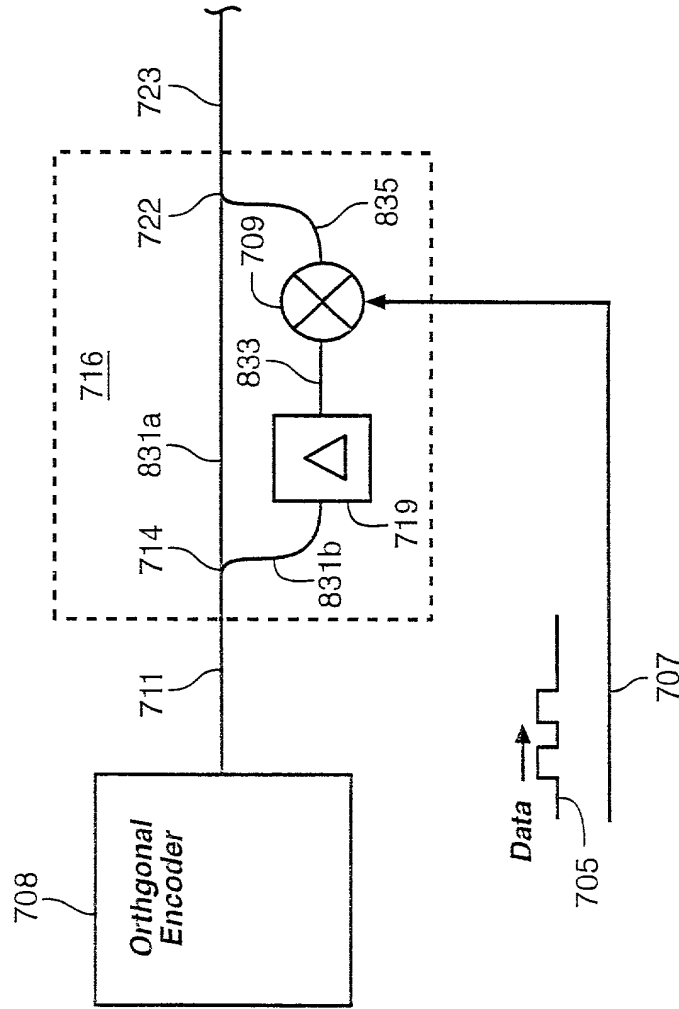


FIG. 58

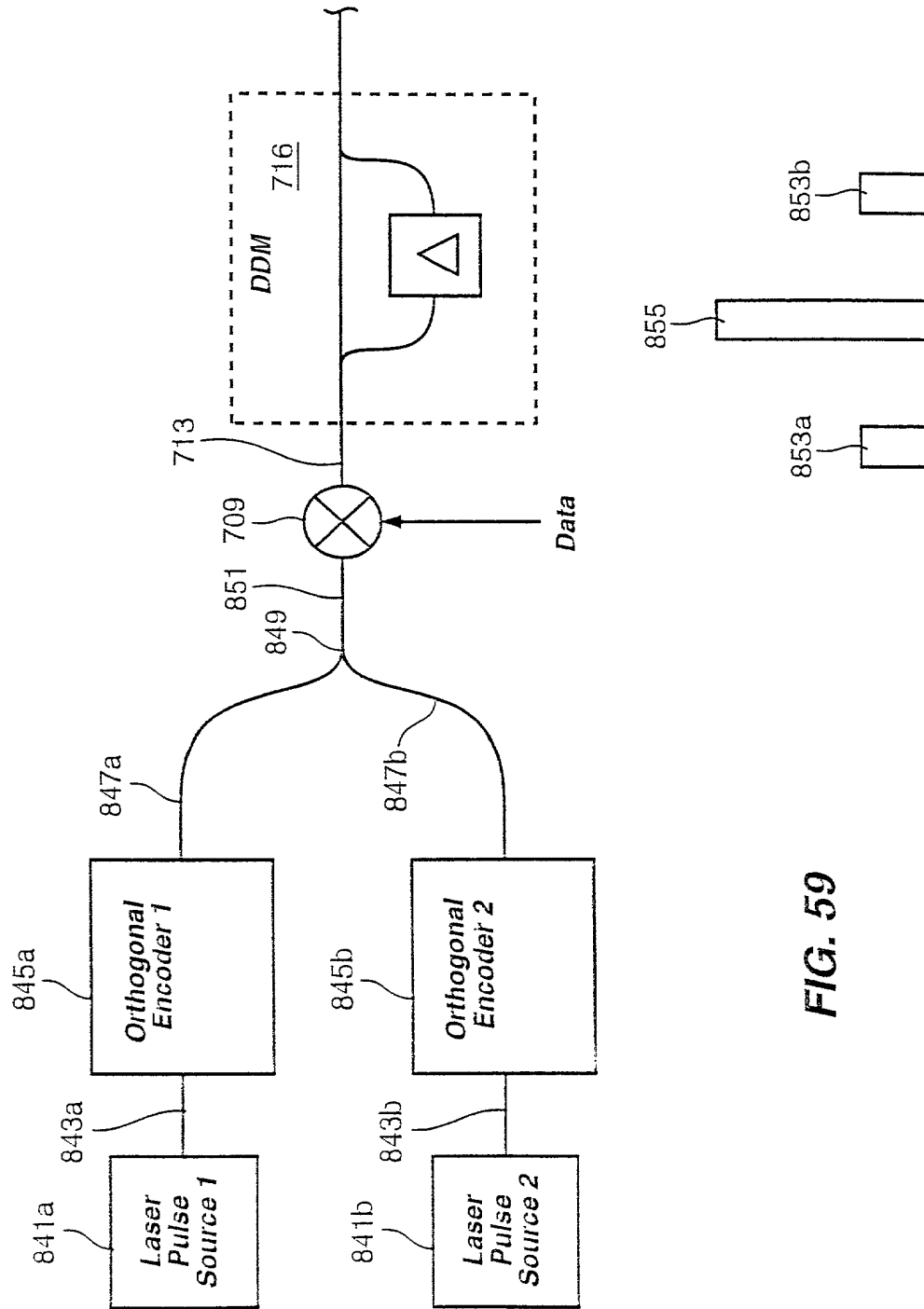


FIG. 59

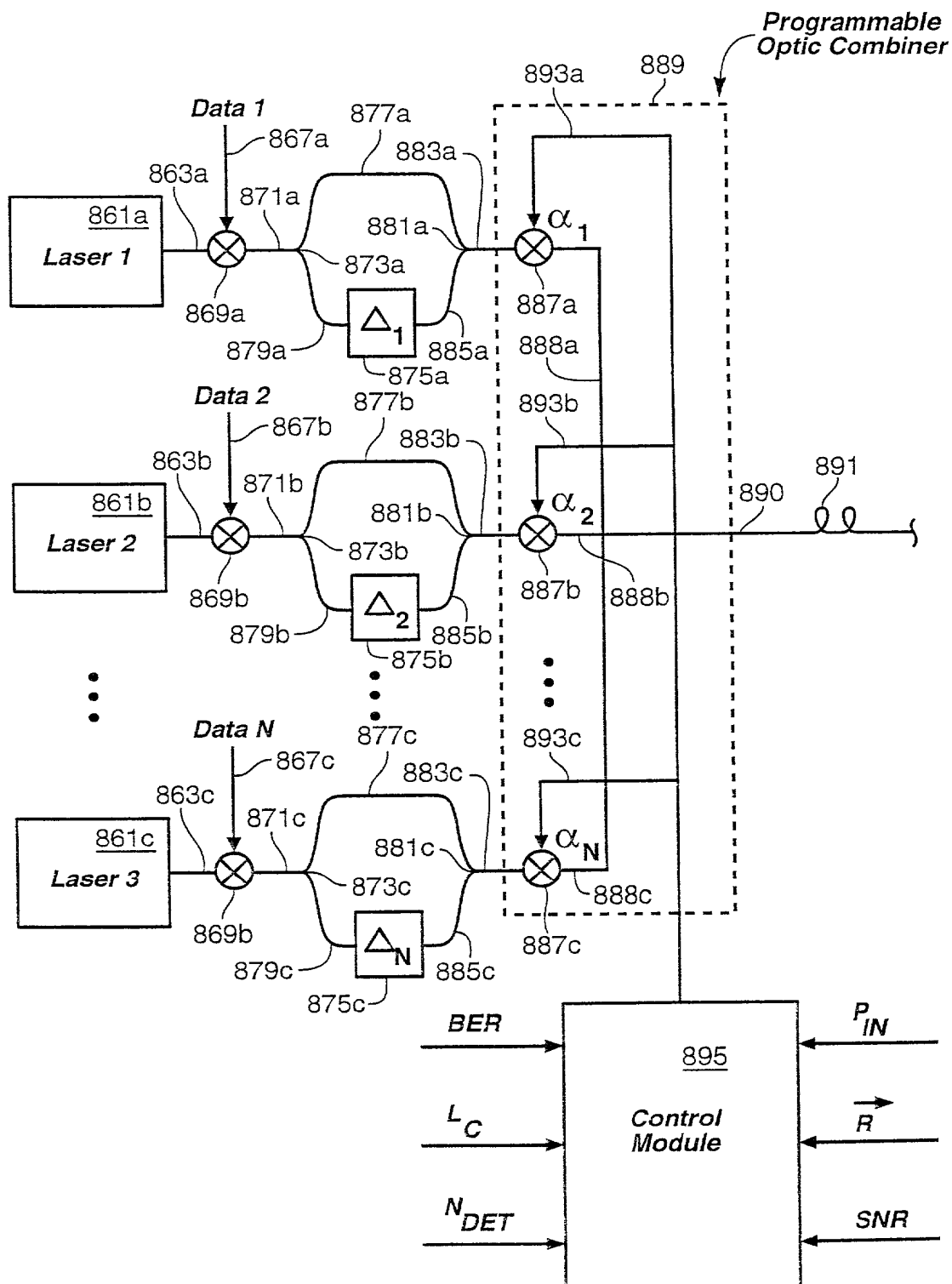


FIG. 60

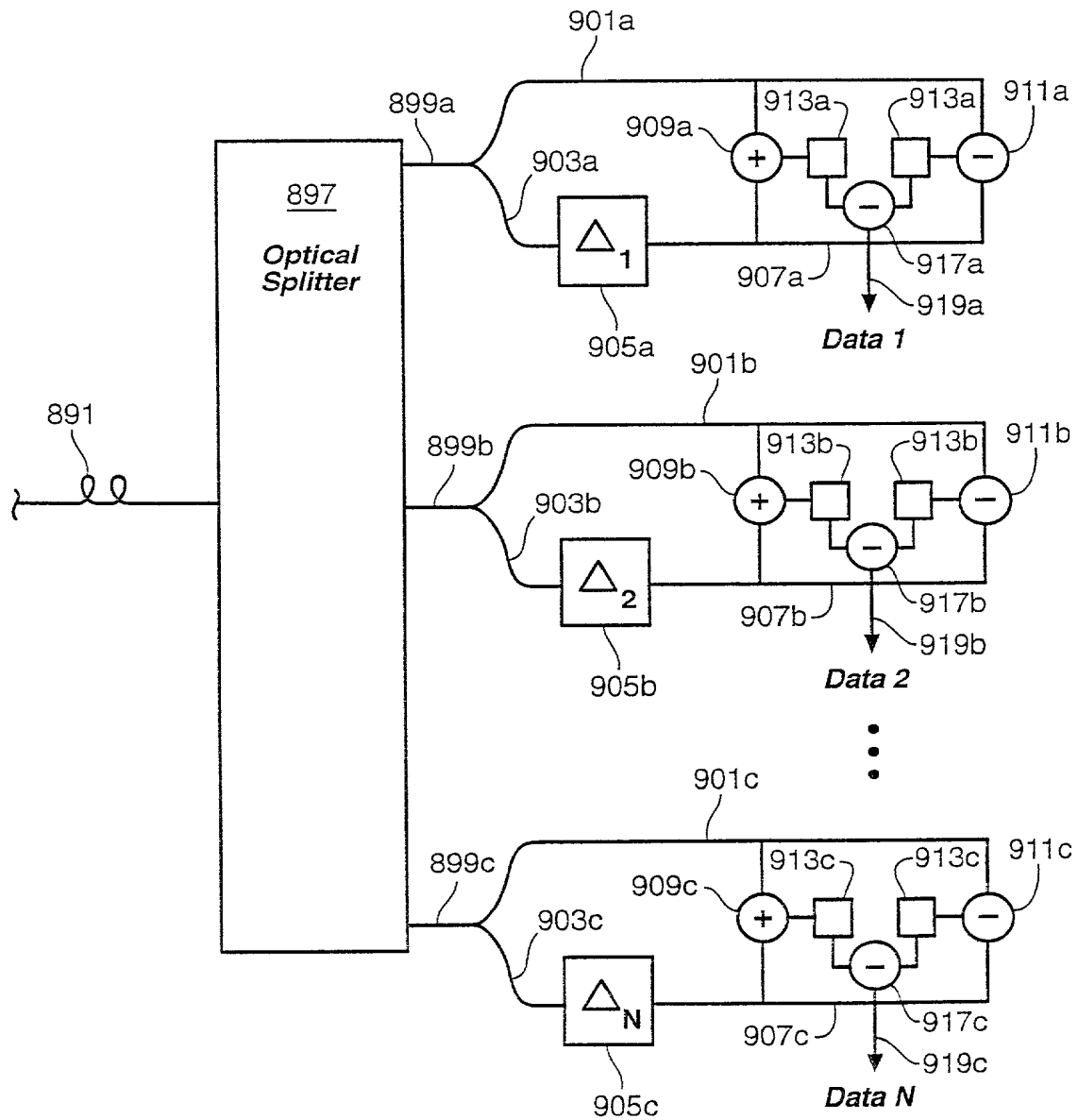


FIG. 61